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OHIO STAT
BUILDING COD

PART 1.
Administration.

PART 2.
Title 1. Theatres and Assembly Halls
Title 3. School Buildings.

PART 3.
Standard Devices.

PART 4.
Sanitation.

ISSUED BY
The Industrial Commission of Ohio

ind.

OHIO STATE BUILDING CODE

PART 1.

ADMINISTRATION.

PART 2.

TITLE 1. THEATRES AND ASSEMBLY HALLS.
TITLE 3. SCHOOL BUILDINGS.

PART 3.

STANDARD DEVICES.

PART 4.

SANITATION.

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PART 1.

ADMINISTRATION.

AN ACT

Establishing a building code, regulating the construction of, repair of, alteration on and additions to public and other buildings and parts thereof; regulating the sanitary condition of public and other buildings, providing for fire protection and fire prevention; and providing for the construction and erection of elevators, stairways and fire escapes in and upon public buildings.

Be it enacted by the General Assembly of the State of Ohio:

Section 1. It shall be the duty of the state fire marshal or fire chief of municipalities having fire departments to enforce all the provisions herein contained relating to fire prevention.

It shall be the duty of the chief inspector of workshops and factories or building inspector, or commissioner of buildings in municipalities having building departments to enforce all the provisions herein contained for the construction, arrangement and erection of all public buildings or parts thereof, including the sanitary condition of the same, in relation to the heating an tilation thereof.

It shall be the duty of the state bo health or building inspector or commissio health departments of municipalities building or health departments to enfo the provisions in this act contained, in r and pertaining to sanitary plumbing. Bu ing herein contained shall be construed empt any other officer or department fr obligation of enforcing all existing la reference to this act.

Section 2. It shall be unlawful fc owner or owners, officers, board, commi other person to construct, erect, build, ec cause to be constructed, erected, built or ped any opera house, hall, theater, schoolhouse, college, academy, seminary, ary, sanatorium, children's home, hospital ical institute, asylum, memorial building, a assembly hall or other building used f assemblage or betterment of people in a nicipal corporation, county or township state, or to make any addition thereto or tion thereof, except in case of repairs for tenance without affecting the constructio tation, safety or other vital feature c building or structure, without complyin the requirements and provisions relating contained in this act.

Section 3. It shall be unlawful fc architect, builder, civil engineer, plumbe *penter,* mason, contractor, sub-contractor man or employe to violate or assist in violating any of the provisions contained in this act.

Section 4. Each section of this act and every part of each section is hereby declared to be independent sections and parts of sections, and the holding of any section or part thereof to be void and ineffective for any cause shall not be deemed to affect any other section or part thereof.

Section 5. Nothing herein contained shall be construed .to limit the council of municipalities from making further and additional regulations, not in conflict with any of the provisions of this act contained nor shall the provisions of this act be construed to modify or repeal any portions of any building code adopted by a municipal corporation and now in force which are not in direct conflict with the provisions of this act. Where the use of another fixture, device or construction is desired at variance with what is described in this statute, plans, specifications and details shall be furnished to the proper state and municipal authorities mentioned in section 1 for examination and approval and if required actual tests shall be made to the complete satisfaction of said state and municipal authorities that the fixture, device or construction proposed answers to all intent and purposes the fixture, device, or construction hereafter described in this statute, instead of actual tests satisfactory evidence of such tests may be presented for approval with full particulars of the results and containing the names of witnesses of said tests.

Section 6. The provisions of this act shall not apply to the construction or erection of any public building or to any addition thereto or alteration thereof, the plans and specifications of which have been heretofore submitted to and approved by the chief inspector of workshops and factories. The provisions of this act shall not apply to the construction, erection or equipment of any public building, addition thereto or alteration thereof, the contract for the construction, erection or equipping of which has been let or entered into prior to the date at which this act takes effect.

Section 7. A justice of the peace, mayor or police judge shall have final jurisdiction within his county in a prosecution for a violation of any provision of the foregoing act.

CHAPTER PENALTIES.

Section 1. Whoever being the owner or having the control as an officer, or as a member of a board or committee or otherwise of any opera house, hall, theater, church, school-house, college, academy, seminary, infirmary, sanatorium, children's home, hospital, medical institute, asylum, memorial buildings, armory, assembly hall or other building for the assemblage or betterment of people in any municipal corporation, township or county in this state, violates any of the provisions of the foregoing [following] act or fails to conform to any of the provisions thereof, or fails to obey any order *of the state* fire marshal, chief inspector of *workshops* and factories or building inspector or commissioner in cities having a building inspection department, or the state board of health in relation to the matters and things in this act contained shall be guilty of a misdemeanor and upon conviction thereof shall be fined not more than one thousand dollars and stand committed until said fine and costs be paid or secured to be paid or until otherwise discharged by due process of law.

CHAPTER PENALTIES.

Section 2. Any architect, civil engineer, builder, plumber, carpenter, mason, contractor, sub-contractor, foreman, or employe who shall violate or assist in the violation of any of the provisions of this act or of any order issued thereunder shall be guilty of a misdemeanor and upon conviction thereof shall be fined not more than one thousand dollars and to stand committed until said fine and costs are paid or secured to be paid or until otherwise discharged by due process of law.

Section 3. All acts and parts of acts in conflict herewith are hereby repealed.

Section 4. This act shall take effect and be in force on and after sixty days from the date of its passage.

OHIO STATE BUILDING CODE.

PART 2.

SPECIAL REQUIREMENTS.

PREAMBLE.

Under part two which follows will be found under their respective titles, the various classes of buildings covered by this code together with the special requirements for their respective design, construction and equipment.

The classifications of the various buildings will be found under the following titles, viz.:

Title 1. Theaters and assembly halls.

Title 2. Churches.

Title 3. School buildings.

Title 4. Asylums, hospitals and homes.

Title 5. Hotels, lodging houses, apartments and tenement houses.

Title 6. Club and lodge buildings.

Title 7. Workshops, factories and mercantile establishments.

Buildings or parts of buildings used only for the specific purposes mentioned under their respective title and classification shall be designed, constructed and equipped as called for under all of the sections coming under such title and *classification.*

Buildings used for two or more different kinds of occupancy and combining the classifications covered under two or more different titles shall be designed, constructed and equipped according to all of the various sections of the different titles affecting such building[s] or parts of such building[s].

The detailed requirements of the above mentioned special requirements, together with standard devices will be found in subsequent PARTS of this code.

TITLE [1].

THEATERS AND ASSEMBLY HALLS.

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Title 1.

THEATERS AND ASSEMBLY HALLS.

Section 1. [Classification.] THEATERS. Under the classification "theaters" are included all buildings or parts of buildings in which persons congregate to witness spectacular, vaudeville, burlesque, dramatic or operatic performances, or other buildings or parts of buildings in which scenery is used, or in which motion pictures are thrown upon canvas, screens or walls.

For minor theaters see section No. 42.

ASSEMBLY HALLS. Under the classification of "assembly halls" are included all buildings or parts of buildings in which persons are assembled for entertainment or amusement, including halls used for lodge rooms or dancing, and, all places where persons congregate to witness vaudeville, burlesque, dramatic or operatic performances, to hear speakers or lecturers, to listen to operas, concerts or musical entertainments in which no scenery is used and no motion pictures are thrown upon canvas, screens or walls and, seating or accommodating one hundred (100) or more persons.

For minor theaters see section No. 42.

Section 2. [Class of construction.] THEATERS. The highest point of the main auditorium foyer of any theater shall not be more than three (3) feet above and in no case below the grade line of the building at the main entrance.

Theaters seating more than one thousand (1,000) persons and theaters with one or more balconies shall be of fireproof construction, except the working part of the stage, viz.: the stage floor between the jambs of the proscenium opening from the curtain line to the rear wall of the stage which shall be of mill or fireproof construction.

Theaters seating one thousand (1,000) persons or less and containing no balcony shall be of fireproof or composite construction, except the working part of the stage floor which shall be of mill construction or better.

No rooms or apartments used for any purpose whatsoever shall be placed over a theater seating five hundred (500) persons or more, unless the entire building is of fireproof construction.

For air domes and summer theaters see section No. 40.

For minor theaters see section No. 42.

ASSEMBLY HALLS. Assembly halls accommodating more than one thousand (1,000) persons and assembly halls with one or more balconies shall be of fireproof construction.

Assembly halls accommodating one thousand (1,000) persons or less, and containing no balcony shall be of fireproof or composite construction.

In the above mentioned assembly halls the highest point of the main auditorium foyer shall not be more than eight (8) feet above, and in no case below the grade line at the main entrance to the building.

Assembly halls accommodating less than seven hundred and fifty (750) persons, with no balcony, with the highest point of the main auditorium floor not more than four (4) feet above the grade line at the main entrance, and covering not to exceed six thousand (6,000) square feet of area; may be built of frame construction, providing all parts below the first floor line are built of composite construction and the building is erected in the "urban" district thirty (30) feet from any other building or structure, or adjoining lot lines, and at least two hundred (200) feet outside of the city fire limits.

Assembly halls accommodating not more than seven hundred (700) persons and with not more than one balcony, may be placed in the second story of a building of fireproof construction, providing the highest point of the main auditorium floor is not more than twenty (20) feet above the grade line at the main entrance to the building.

Assembly halls accommodating not more than four hundred (400) persons and with no balcony, may be placed in the third story of a building of fireproof construction, providing the highest point of the main auditorium floor is not more than thirty-five (35) feet above the grade line at the main entrance to the building.

Assembly halls accommodating not more than four hundred (400) persons and with no balcony, may be placed in the second story of a building of composite construction, providing the highest point of the main auditorium floor is not more than twenty (20) feet above the grade line at the main entrance to the building.

EXCEPTIONS. Where an assembly hall or lodge room is built in connection with and as a part of a club or lodge building, and is used by the members of the club, society or lodge for private gatherings, and, is not rented or let out for the use of the general public, the following exceptions to the requirements of part 2, title 1 are made, viz.:

An assembly hall or lodge room accommodating not to exceed nine hundred (900) persons, with one balcony, may be placed in the second story of a building of fireproof construction providing the main floor level is not more than twenty (20) feet above the grade line at the main entrance to the building.

An assembly hall or lodge room accommodating not to exceed five hundred (500) persons, with one balcony, may be placed in the third story of a building of fireproof construction providing the main floor level is not more than thirty-five (35) feet above the grade line at the main entrance to the building.

An assembly hall or lodge room accommodating not to exceed two hundred and fifty (250) persons, with no balcony, may be placed in the fourth story of a building of fireproof construction providing the main floor level is not more than forty-five (45) feet above the grade line at the main entrance to the building.

An assembly hall or lodge room accommodating not to exceed six hundred (600) persons, with no balcony, may be placed in the second story of a building of composite construction providing the main floor level is not more than twenty (20) feet above the grade line at the main entrance to the building.

An assembly hall or lodge room accommodating not to exceed three hundred (300) persons, with no balcony, may be placed in the third story of a building of composite construction providing the main floor level is not more than thirty-five (35) feet above the grade line at the main entrance to the building.

Section 3. [Exposures and courts.] No theater or motion picture show room shall be less than eighteen (18) feet wide, measuring the clear between the walls, nor less than thirteen (13) feet high.

Theaters or motion picture show rooms from twenty (20) to thirty (30) feet wide, measuring in the clear between the walls, and not over one hundred (100) feet long, measuring between the outside of the front and rear walls, and theaters and assembly halls seating not more than three hundred (300) persons shall have in addition to the main entrance, either the rear or one side wall abutting upon a street, alley or open court.

If the lobby or entrance to the above theater or motion picture show room is built at an angle to the auditorium the length of the lobby or entrance including the thickness of the walls, added to the length of the auditorium and stage including the rear wall shall not exceed one hundred (100) feet.

The width of the above street, alley or open court shall be not less than six (6) feet.

Auditoriums in theatres and assembly halls built in excess of the above dimensions shall have in addition to the main entrance two side walls abutting upon streets, alleys or open courts.

The width of such streets, alleys or open court shall be not less than eight (8) feet where the seating capacity is not over one thousand (1,000) persons; above one thousand (1,000) and not more than fifteen hundred (1500), nine (9) feet in width; above fifteen hundred (1500), and not more than two thousand (2,000), ten (10) feet in width; above two thousand (2,000), ten (10) feet plus one (1) foot for each additional five hundred (500) or part thereof.

Said street, alleys or open courts shall be of such a length as to receive and connect with all exits, doors, fire escapes, and stairways leading thereto.

If the court above required be an interior court, the same shall be continued through the *adjoining buildings* or structures by passageways, with walls, ceilings and floors of fireproof construction, and the height of the passageway shall not be less than ten (10) feet in the clear.

No openings other than exit doors shall be placed in these passageways.

The said courts or passageways shall not be used for storage or other purposes whatsoever, except for egress and ingress.

Section 4. [Sub-divisions and fire stops.] Theaters and assembly halls built in connection with or as part of a building used for other purposes than a theater or assembly hall, shall have all of its various parts separated from the other [parts of the] building(s) by standard fire walls, or by fireproof walls, ceilings and floors, and all communicating openings between the theater or assembly hall and the other parts of the building shall be covered by double standard fireproof doors.

If these openings are used or liable to be used as a means of ingress or egress, a standard self-closing firedoor shall be placed on one side of the wall, and either a standard automatic rolling steel shutter or a standard automatic fire door shall be placed on the other side of the wall. The automatic shutters or doors being kept open during the occupancy of the building.

EXCEPTIONS. Where an assembly hall is built in connection with and is a necessary adjunct to a church, school building, lodge building, club house, hospital or hotel, and is designed principally for the use of the occupants of such buildings, the above mentioned standard fire walls or *fireproof walls,* ceilings and floors will not be necessary, providing the construction of the other parts of the building is of the same, or of a better grade than the assembly hall.

No theater or assembly hall shall have any door or window connecting directly with any sleeping or living room of a tenement or dwelling house, and no theater or assembly hall shall be used for living or sleeping purposes.

All exterior and court walls of buildings coming under this classification (except buildings of frame construction) within thirty (30) feet of any other building, structure or lot line, shall be provided with the following fire stops, viz., walls shall be standard fire walls; all windows shall be standard fireproof windows with automatic attachment and doors shall be standard hinged fire doors without automatic attachment.

Section 5. [Proscenium wall.] The stage, if containing movable scenery, shall be separated from the auditorium by brick or monolithic concrete walls not less than twelve (12) inches thick and the said wall shall extend the entire width of the building. In buildings of fireproof construction this wall shall extend to the highest roof adjoining the same, and in buildings of composite construction the wall shall extend not less than four (4) feet above the roof of the stage, and not less than six (6) feet above the roof of the auditorium, as the case may be.

The curtain wall under the proscenium opening shall be of brick or monolithic concrete not less than twelve (12) inches thick, be placed *under the* center of the curtain, and be built up close to the under side of the finished stage floor.

There shall be no openings in this wall above the stage floor level except the proscenium opening and one (1) communicating opening between the stage and the auditorium, and not more than two (2) openings below the stage floor level.

The proscenium opening shall be covered by a fire curtain as hereinafter specified, and all other openings by standard automatic or self-closing fire doors. The latter openings shall not exceed twenty-one (21) superficial feet each.

The wall over the proscenium opening shall be carried by a fire-proof steel girder with a relieving arch above, or by a brick arch of sufficient capacity and abutments on each side of the opening to insure stability against the thrust of the arch.

The height of the proscenium wall, over the proscenium opening shall not be less than twice the greatest height of the proscenium opening plus six (6) feet.

Section 6. [Workshops, storage and property rooms.] No scene dock, workshop, storage or general property room shall be placed above the stage or auditorium of any theater, or in any fly gallery.

Scene docks, workshops, storage and general property rooms shall be enclosed by masonry or standard fireproof walls, and all openings in the above walls shall be provided with standard self-closing or automatic fire doors, or standard automatic rolling steel shutters placed on both sides *of the wall.*

If scene docks, workshops, storage or general property rooms are located under the stage the same shall have standard fireproof ceilings and floors.

Section 7. [Dressing rooms.] All walls separating the dressing rooms from the stage or other parts of the building, together with all partitions dividing or surrounding the same shall be standard fire walls.

The above rooms shall be separated from the other parts of the building by self-closing or automatic standard fire doors.

If the dressing rooms are placed under the stage, the dressing room including the corridors or passageways connected thereto shall be of fireproof construction, and all openings into the apartments containing the same shall be covered by standard self-closing fire doors.

No dressing or employe's room shall be placed more than one story below the grade line, and no dressing room shall be placed above or below the auditorium.

All dressing rooms shall be well ventilated by windows opening into areaways, streets, alleys or open courts.

Section 8. [Heater room.] Furnaces, hot water heating boilers and low pressure steam boilers may be located in the buildings, providing the heating apparatus, breeching, fuel room and firing room are inclosed in a standard fireproof heater room and all openings into the same are *covered by* standard self-closing fire doors.

No boiler or furnace shall be located under the auditorium, stage, lobby, passageways, stairways, exits of a theater; or, under any exit, passageway or lobby of an assembly hall. No cast iron boiler carrying more than 10 pounds pressure or steel boiler carrying more than 35 pounds pressure shall be located within the main walls of any theater or assembly hall.

Section 9. [Smoking room.] No smoking room shall connect with, or be entered directly from any auditorium of a theater or assembly hall; or, connect with, or be entered from any lobby, entrance, foyer or corridor leading to any auditorium of a theater or assembly hall unless protected by a vestibule with two sets of self-closing doors.

Section 10. [Seats.] The plans shall be clearly marked showing the maximum number of persons to be accommodated in the various parts of the building.

All seats, chairs and benches in the auditorium, balcony and gallery shall be spaced not less than two feet six inches (2′ 6″) from back to back, measuring horizontally.

The average width of seats or chairs measuring from center to center of arms shall be not less than twenty (20) inches, and in no case shall a seat be less than nineteen (19) inches.

If benches are used, the seating capacity of the same shall be established by allowing one sitting or seat to each fifteen (15) inches of length or fraction thereof.

All seats, chairs and benches (except chairs in boxes or loggias) shall be securely fastened to the floor.

Boxes or loggias shall be so designed, or if necessary, shall be provided with rails which will prevent the seats or chairs from being pushed or knocked into the aisles.

On the main auditorium floor level in assembly halls with level floors, seats or chairs may be securely fastened together in sections, and the end feet or legs of each section of seats or chairs (or benches) shall be fastened to the floor by screws or bolts, or be held to place by rubber tips or shoes.

No seat shall have more than six (6) seats between it and the aisle on either side.

Section 11. [Seat benches.] No seat bench or platform shall have a riser of more than twenty-two (22) inches, be placed more than (one foot two inches (1′ 2″)) [fourteen (14) inches] above the level of the aisle immediately next to the same, or be placed nearer any ceiling or soffit than eight (8) feet.

Section 12. [Aisles and foyers.] Aisles with seats on both sides of same shall not be less than three (3) feet and aisles with seats on one side of the same not less than two (2) feet wide at the beginning, and shall be increased in width toward the exits at the ratio of one and one-half (1½) inches to five (5) feet of run.

On the auditorium or main floor level (these) [wall aisles] shall be not less than three (3) feet and in each and every balcony or gallery not less *than three* feet six inches (3′ 6″) wide.

Aisles not less than two feet six inches (2′ 6″) wide shall be placed between banks of seats and the front of the boxes or loggias.

Where the main aisles on the auditorium floor level (not wall aisles) as above provided for do not lead directly to the exits placed in the side walls, cross aisles or foyers not less than five (5) feet wide shall be provided. Cross aisles or foyers shall intersect with all main aisles and lead directly to each and every exit.

Where the main aisles (not wall aisles) in each and every balcony or gallery do not lead directly to the exits in the side walls, cross aisles not less than five (5) feet wide shall be provided. One cross aisle shall be provided to each twelve (12) rows of seats or benches, or less.

Cross aisles shall run from wall to wall and intersect with all main aisles.

Section 13. [False openings.] No false openings giving the appearance of a door or window where none exists shall be placed in any part of a theater or assembly hall used by the general public.

Section 14. [Mirrors.] No mirror shall be placed in any part of a theater or assembly hall used by the general public, except in the women's and men's retiring and toilet rooms.

Section 15. [Motion picture machine and booth.] By the term "motion picture machine" is meant any machine or device operated by or with the aid of electricity, adapted and used to *project upon* a screen, or other surface, pictorial representations of any character which the public are admitted to view, upon payment of admission fee or otherwise.

Every motion picture machine shall, before being operated, be installed in a room, compartment or booth, constructed entirely of fire resistive material; said room, compartment or booth shall be ventilated to the outside air, and all openings in the same shall be equipped with automatic devices designed to promptly close all of said openings with fire resistive doors in case of fire within said room, compartment or booth. Said fire resistive material shall include brick, tile, concrete, metal or hard asbestos board, or asbestos building lumber.

Where the room, compartment or booth is composed of metal or hard asbestos board, or asbestos building lumber, it shall be constructed and equipped as follows:

FRAMING. Shall be of not less than one inch by one inch by one-eighth inch (1″ x 1″ x $\frac{1}{8}$″) angle iron, properly braced to secure rigidity and securely riveted or bolted at joints.

SIZE. Shall be at least six (6) feet high, six (6) feet long and five (5) feet wide where only one machine is to be installed. When more than one machine is to be placed or operated the room, compartment or booth shall not be less than six (6) feet high, six (6) feet wide and eight (8) feet long.

SHEATHING. Shall be of metal not less than 20 B & S gauge or one-quarter ($\frac{1}{4}$) inch hard asbestos board, or asbestos building lumber securely riveted or bolted to angle iron frame.

FLOOR. Shall be of same material as sides and roof, riveted or bolted to iron frame, covered with a rubber or cork matting.

DOOR OPENING. Shall be not larger than two (2) feet by five (5) feet.

DOOR. Shall be of same construction as booth and arranged to close automatically, either by means of a spring to be placed on the exterior and riveted to the frame work, or by a metal rope and weight attachment; door shall overlap sides, top and bottom at least three (3) inches. Two latches of steel shall be provided, and be placed one twelve (12) inches from top and the other twelve (12) inches from bottom of door. Latch bars shall be connected by metal rod, so that one operation opens both latches. The door shall be so constructed and braced, and corners reinforced by fillet angles as to prevent buckling.

NOTE. A door constructed of two (2) thicknesses of well seasoned white pine, or similar non-rosinous wood, dressed to thirteen-sixteenths (13-16) inch (full) layers of boards, to be at right angles and covered with double locked seam tin plate and arranged to close as specified herein, may be used in lieu of the above.

OPENINGS. (For operator's view and through which pictures are thrown.) Shall be provided with a gravity door of at least one-quarter (¼) inch boiler iron, so arranged as to close all openings; held in position by fusible links, placed in series, with fine cord so arranged that normally one of the links is suspended directly over the film or magazine when inside of the apparatus, or arranged so as to be normally closed and held open by the pressure of the operator's foot.

SHELF. All shelves, furniture and fixtures within the said booth shall be constructed of incombustible material, and no material of any sort whatever of a combustible nature, shall be permitted or allowed to be within such booth, except the films used in the operation of the machine.

VENTILATION. Booth shall have an opening not less than ten (10) inches in diameter for ventilating, which shall be flanged to carry a standard conductor pipe for exhausting the hot air generated in operating the machine. Connection shall be made with chimney or the outer air. Conductor pipe shall be riveted together, and outer end arranged so that escaping gases or flames will not come in contact with combustible material.

MACHINES. Shall be equipped with feed and take up reels in metal receiving boxes and joints of same shall be riveted or flanged. A shutter shall be placed in front of the condenser.

The arc lamp used in a motion picture machine shall be constructed and installed as follows:

(a) Shall be constructed entirely of metal except where the use of approved insulating material is necessary.

(b) Shall be substantially constructed and so

designed as to provide for properly ventilating, and to prevent sparks being emitted from lamps when same is in operation, and mica shall be used for frame insulation.

(c) Self closing doors may be provided on side and rear, and observation ports not larger than two (2) inches square may be provided when closed with glass.

(d) Lamp shall be controlled by a double poled switch and cut out within easy reach of the operator.

(e) Conductors supplying current to lamp shall not be smaller than No. 6 B. & S. gauge or its equivalent. Stranded conductors shall be used between lamp and permanent wiring, and asbestos insulation shall be used on conductors inside lamp and where liable to be brought within six (6) inches of it. Stranded conductors shall be provided with approved lugs. Conductors passing through case or lamp shall be protected by porcelain bushings.

(f) Resistance box shall be kept not less than one (1) foot from any combustible material, or shall be separated from it by a slab of slate or marble. The resistance box shall be provided with a substantial metal case.

(g) The machine stand on which machine is mounted shall be made of non-rosinous wood, with metal legs well braced to secure rigidity, and any wood used in connection with this stand shall be painted with three coats of fire-proof paint.

No artificial light shall be used in any booth, room or compartment in which a motion picture machine is installed, except that produced by electricity. No smoking shall be permitted in said booth, room or compartment. Extra films shall be kept in a metal box with tight fitting cover. Each machine while in operation shall be controlled by an experienced operator. No motion picture machine shall be operated other than by hand power.

All rewinding of films shall be done within the picture machine room, compartment or booth.

Section 16. [Automatic ventilation.] The stage, if containing movable scenery shall be provided with one or more ventilators placed near the center and above the highest point of the stage, extending at least six (6) feet above the stage roof, of a combined area equal to at least one-eighth (⅛) the area of the stage floor.

The openings in such ventilators shall be closed by valves, louvers or dampers, so counterbalanced as to open automatically, and so constructed that ice or snow will not interfere with their operation; or, the roof of these ventilators may be made in the form of sliding doors providing all tracks, wheels and working apparatus is so placed as to be protected from snow and ice.

All valves, louvers, dampers or doors shall be held closed by hemp or cotton cords, running to and connecting with the stage floor close to each stage exit door. Fusible links shall be inserted in these cords close to each ventilator, ten (10) feet above the stage floor and midway between *these two points.*

If glass is placed in the ventilator a wire screen of one-half (½) inch mesh shall be suspended under the ventilator and be placed not less than three (3) feet below the soffit of the roof.

Section 17. [Proscenium curtain.] The proscenium opening in theaters when scenery is used shall be provided with a fireproof rigid curtain or a curtain of asbestos or other fireproof material, approved by the chief inspector of workshops, factories and public buildings of the State of Ohio, or the building inspector or commissioner in cities having building inspection departments, curtain shall overlap the brick proscenium wall at each side not less than twelve (12) inches and at the top not less than three (3) feet, and slide vertically at each side within iron grooves or channels to a depth of not less than twelve (12) inches; said grooves or channels to be made of iron or steel of not less than one-quarter (¼) inch in thickness, be securely bolted to the brick wall and extend to a height of not less than four (4) feet above the top of the curtain when raised to its full limit.

Said curtain shall be suspended or hung by steel cables passing over ball bearing iron or steel sheaves supported by wrought iron brackets of sufficient strength and well braced, and brackets shall be securely attached to the proscenium wall by through bolts with nuts and washers on the opposite side of the wall.

Said *curtain shall* be raised at the commence*ment and lowered* at the close of each performance. If the proscenium curtain is of asbestos, the same shall be of pure asbestos fiber, shall weigh not less than three (3) pounds per square yard and shall be re-inforced with wire or wire spun in the asbestos. At the top and bottom of the curtain shall be placed a wrought iron or steel pipe not less than two (2) inches in diameter, securely fastened to the curtain and covered over with like material as the curtain itself.

The excess weight of the curtain shall be overcome by a check rope of cotton or hemp, extending to the floor on both sides of the stage so that the cutting or burning of which will release the curtain, and the same will then descend at its normal rate of speed.

The proscenium curtain shall be placed at the nearest point at least two feet (2′) distant from the foot lights.

No oil paint shall be used on any asbestos curtain.

Section 18. [Means of ingress to theatres.] The means of ingress to theaters shall be at the ratio of one foot eight inches (1′ 8″) in width to each one hundred (100) persons to be accommodated.

To the widths established by the above ratio one (1) foot shall be added for hindrance.

In theaters requiring but one entrance, the same shall be not less than six (6) feet wide in the clear.

Section 19. [Means of egress.] THEATERS. *The means of* egress from theaters shall be not less than the following, and shall be provided in addition to the usual means of ingress.

From the main or auditorium floor level one six (6) foot wide exit door shall be provided on each side of the auditorium to each five hundred (500) persons or fraction thereof.

Where one exit door is required on each side, the same shall be placed midway between the front and rear walls of the auditorium.

Where two exit doors are required on each side, one shall be located near the front and the other near the rear wall of the auditorium.

Where more than two exit doors are required on each side, one shall be located near the front wall, one near the rear wall, and the others equally spaced between the two.

If these exit doors are above or below the grade line the same shall be provided with stone, cement or iron steps leading to the grade line. Steps shall be not less than six (6) feet wide.

From each balcony or gallery one exit door three feet four inches (3′ 4″) wide shall be provided on each side of each balcony and gallery to each three hundred (300) persons or fraction thereof.

Where one exit door is required on each side, the same shall be placed at the center of the balcony or gallery.

Where two exit doors are required on each side, one shall be placed near the rear wall, and the other near the front railing or wall.

Where *more than* two exit doors are required on each side, one shall be placed near the rear wall, one near the front rail or wall, and the others equally spaced between the two.

The above exit doors from balconies and galleries shall lead to B, C or D standard fire escape.

Not more than one exit door three feet four inches (3′ 4″) wide shall connect with any fire escape.

Exceptions. Theaters from twenty-five (25) to thirty (30) feet wide, not over one hundred (100) feet long and seating not over three hundred (300) persons, shall have one six (6) foot wide exit door from the main auditorium to the side or rear street, alley or open court, and one three feet and four inches (3′ 4″) wide exit door from the balcony leading to B, C & D standard fire escape.

In lieu of fire escapes inclosed fireproof stairways may be used. An inclosed fireproof stairway four (4) feet wide will be the equivalent to one fire escape, and if six (6) feet wide will be the equivalent to two fire escapes. Where enclosed fireproof stairways six (6) feet wide are used the same shall have double doors six (6) feet wide, which will be the equivalent to two exit doors three feet four inches (3′ 4″) wide.

The basement under the working part of the stage shall have an exit door not less than three (3) feet wide, placed as far distant from the usual means of ingress as possible and provided *with steps* leading to the grade line of the ad*joining* street, alley or open court. These steps if exposed to the weather shall be made of stone, concrete or cement.

The stage shall be provided with two exit doors not less than three (3) feet wide. These shall be placed on the opposite sides of the stage, back of the wings and shall not be placed closer together than the width of the proscenium opening plus ten (10) feet.

Each fly gallery shall be provided with an exit door not less than two feet six inches (2′ 6″) wide nor less than six (6) feet high leading to an A, B, C or D standard fire escape or to a No. 1 standard [fire] ladder. Exit door shall be located at the opposite end of the fly gallery from the usual means of ingress.

Each dressing or employe's room shall have two separate and distinct means of egress; one the usual means of ingress and the other an emergency exit.

Each dressing or employes' room placed below the grade line shall be provided with an exit door or window leading to an areaway and provided with a No. 2 standard [fire] ladder, or, suites of dressing or employes' rooms placed below the grade line may have a door or window opening placed at the opposite end of the corridor from the usual means of ingress, which opening shall lead to an open areaway from which stone, concrete or iron steps not less than three (3) feet wide shall run to the grade line of a street, alley or open court.

Each dressing or employes' room placed above the grade line *shall have* a window or door leading *to an A, B, C or D* standard fire escape run-

ning to the grade line of a street, alley o
court; or suites of dressing or employes'
placed above the grade line may have
window or door placed at the opposite
the corridor from the usual means of
leading to an A, B, C or D standard fire

All stairways and tunnels, and all do
window openings, leading to fire escap
closed fireproof stairways or fire ladd
hereinafter specified to be marked by illu
signs, shall have painted signs on or ab
same indicating the word "EXIT" in plai
letters not less than six (6) inches high,
a bright red.

Assembly Rooms. The seating capaci
be established by the actual number of
to be accommodated in seats, benches an
where the same are used, and where no
the capacity shall be established by allow
each person six (6) square feet of floo
except in dining rooms and dance halls
the allowance of floor area per person s
at the (rate) [ratio] of fifteen (15) squa

In establishing the widths of the exits
be assumed that the audience in each
balcony or apartment, will be equally dis
to the various means of egress.

The usual means of ingress may be cor
as a means of egress.

Each room, balcony, stage or apartme
have not less than two separate and
means of egress where the seating cap
less than four hundred (400) persons, a

exceeding four hundred (400) persons one additional means of egress shall be provided to each two hundred (200) persons or fraction thereof.

Means of egress shall be provided at the ratio of three (3) feet in width to each one hundred (100) persons; plus one (1) foot for hindrance.

If social rooms are placed below the main floor line, each room shall have two separate and distinct means of egress at the ratio of three (3) feet in width to each one hundred (100) persons to be accommodated, plus one (1) foot for hindrance. These exits shall be in addition to the usual means of ingress from the main floor. Means of egress shall be located as far apart as possible.

The above means of egress shall be exit doors leading to either the ordinary inside stairways, B, C or D standard fire escapes or iron, stone or cement steps.

All stairways, tunnels and exit doors shall have painted signs on or above the same indicating the word "EXIT" in plain block letters not less than six (6) inches high.

Section 20. [Stairways.] FOR THEATERS. The width of stairways in theaters used as a means of ingress shall be at the ratio of one foot eight inches (1′ 8″) to each one hundred (100) persons to be accommodated, plus one (1) foot for hindrance.

No stairway shall be less than three feet six inches (3′ 6″) or more than six (6) feet wide, measuring *between the* hand rails.

Where more than one stairway is required for any one tier or level they shall be located as far apart as possible.

Where the seating capacity exceeds the limit for two six (6) foot stairways, wider stairways may be used providing a substantial center hand rail with newel and angle posts not less than six (6) feet high, dividing the stairways into widths not less than three feet six inches (3′ 6″) and not exceeding six (6) feet wide [is used].

Stairways used by the general public shall have a uniform rise of not more than seven (7) inches and a uniform tread of not less than ten and one-half (10½) inches.

Stairways not used by the general public shall have a uniform rise of not more than seven and one-half (7½) inches and a uniform tread of not less than nine and one-half (9½) inches. The above dimensions shall be from riser to riser and from tread to tread.

No riser shall be less than five inches (5″).

No stairway or steps that may be used as a means of egress in ascent shall have nosings.

No stairway shall have more than sixteen (16) nor less than three (3) risers in any run.

No winders shall be used and all nosings shall be straight.

Hand rails shall be provided on both sides of all stairways and steps. Outside steps and areaways shall be provided with guard rails not less than two feet six inches (2′ 6″) high.

A uniform width shall be maintained to all *stair and* stair platforms used by the general public by rounding or beveling the angles and corners.

No door shall open directly upon a stairway, but shall open upon a platform or landing equal in length to the width of the door.

All stairways leading directly from the basement to the stage, shall be enclosed by standard fireproof walls and the openings from the basement to the same shall be covered by standard self closing fire doors.

No stairways used by the general public shall be placed over any basement stairway, unless the basement stairway is enclosed in fireproof walls, and the ceiling or soffit over the same is of fireproof construction, and all openings to the basement stairway are provided with standard self closing or automatic fire doors.

No closet for storage shall be placed under any stairway.

No stairway used by the general public shall lead downward to a platform and then upward to a new level or vice versa except the steps in the balcony and gallery aisles.

If a theater has more than one balcony, the stairways from the level above the first balcony shall run directly to and connect with the streets, alleys or open courts, and shall have no direct connection with any [other] part of the theater.

Stair treads shall be either carpeted, or be covered with rubber or lead mats securely fastened to place, or the tread shall be formed of a non-slipping surface.

Where stairways are required in theaters, *inclines or gradients* may be used providing the same are supplied of the width, in the number, and are located as prescribed for stairways. The pitch of incline or gradient shall not exceed one (1) foot in rise in twelve (12) feet of run.

FOR ASSEMBLY HALLS. All stairways shall be enclosed by masonry or fireproof walls, with fireproof ceiling over and a fireproof floor below the stair well, and all openings into the same shall be fitted with standard self closing fire doors.

Widths of stairways shall be at the ratio of three (3) feet per hundred (100) persons to be accommodated, plus one (1) foot for hindrance.

Otherwise stairways and inclines shall be constructed and equipped the same as required for theaters.

Section 21. [Gradients and inclines.] All lobbies or entrances to theaters shall be level or flush with the sidewalk.

To overcome any difference in levels in and between courts, corridors, lobbies, passageways, auditorium and aisles on the ground floor, gradients shall be employed.

Gradients in auditorium aisles shall not exceed one (1) foot in rise to five (5) feet in run, and no other gradient or incline shall exceed one (1) foot in rise to twelve (12) feet in run.

Sills at all exits shall be so designed as to be level and flush with the adjacent floors.

Section 22. [Passageways.] Halls, foyers and passageways shall be so designed and proportioned as to prevent congestion and confusion.

No hall, foyer, or passageway leading to a stairway or exit shall be less in width than the width of the stairway or exit, and in no case less than four (4) feet wide.

All corridors, passageways, hallways and stairways used by the general public leading from any public part of the building or to any toilet, retiring or check room shall permit of a free passage to an outer exit of the building without returning.

The aggregate capacity of foyers, lobbies, corridors and passageways for the use of the general public, not including aisle space between seats, shall be for each floor, balcony or gallery, sufficient to contain the entire number of persons to be accommodated on the said floor, balcony or gallery, in the ratio of one and one-half (1½) square feet per person.

Any stairway, corridor or passageway shall be of equal capacity to the aggregate width of all stairways, corridors or passageways which it serves as a means of egress.

Section 23. [Elevators.] Elevators shall be inclosed by standard fire walls, or by fireproof walls, ceilings and floors, and all openings into the same shall be covered by standard fire doors for elevators.

Elevators shall not be considered or computed as a means of egress.

Section 24. [Exit doors and windows.] No door used as a means of egress shall be less than three (3) feet wide, (except door from fly gallery).

No single door or leaf to a double door shall be more than four (4) feet wide. No two doors shall be hinged together.

Where exit doors more than four (4) feet wide are required the opening shall be provided with two doors.

No exit door (except from fly gallery) shall be less than six feet four inches (6′ 4″) high. All exit doors shall be level with the floor, swing outward, viz., toward the open or toward the natural means of egress, and be so hung as not to interfere with passageways or close other openings, stairways or fire escapes.

No double action, rolling, sliding or revolving doors shall be used in any part of the building used by the general public, where used, or liable to be used as a means of ingress or egress, except rolling and sliding doors may be used as previously mentioned under subdivisions section 4.

Exit windows and windows leading to A standard fire escapes shall have the lower sash hinged at the side to swing out, or hung on weights to raise. This sash shall be not less than two feet six inches (2′ 6″) wide, not less than three (3) feet high, and not more than two (2) feet above the floor level.

Section 25. [Scuttles.] Over the stage and auditorium there shall be placed in the roof a bulkhead or scuttle not less than three (3) feet long, nor less than two (2) feet wide, covered on the outside with tin or other metal, and provided with a stairway or permanent ladder leading thereto. Ladder placed on the stage shall be of iron.

Bulkhead and scuttle doors shall never be locked.

Section 26. [Wall hand rails.] Aisles placed against the outer walls of balconies and galleries shall shall be provided with substantial wall hand rails.

Section 27. [Stage vestibules.] All entrances to the stage from the streets, alleys or open courts, shall be vestibuled in such a manner as to protect the curtain, scenery and auditorium against draughts of air.

Section 28. [Special construction.] The working part of stage floors, viz.: the width of the proscenium opening by the depth of the stage, shall be of a mill construction or better.

Where composite construction is used, all ceilings under the stage (except working part of stage) and the ceilings of all storage and property rooms and scene docks shall be lathed with metal lath and be covered with plaster.

Gridiron slats where fireproof construction is used shall be made of incombustible material, but need not be fireproofed.

Foot light trough if not made of fireproof materials shall be lined with tin or other incombustible materials.

All floors to toilet rooms, lavatories, water closet compartments, or any enclosure where plumbing fixtures are used with the building shall have a waterproof floor and base made of non-absorbent indestructible waterproof material, viz.: Asphalt, glass, marble, vitrified or glazed tile or terrazzo, or monolithic composition.

Base shall be not less than six (6) inches high and shall have a sanitary cove at the floor level.

Basements shall have damp proof floors.

Section 29. [Floor and roof loads.] In calculating construction the superimposed loads on the various floors and roof shall be assumed as follows:

In auditoriums with fixed seats, eighty (80) pounds per square foot.

In auditoriums with movable seats one hundred (100) pounds per square foot.

In halls used for dancing, one hundred and fifty (150) pounds per square foot.

In lobbies, passageways, stairways and corridors, one hundred (100) pounds per square foot.

In dressing rooms, fifty (50) pounds per square foot.

On the stage, two hundred and fifty (250) pounds per square foot.

In scene docks, one hundred (100) pounds per square foot.

On gridiron, seventy-five (75) pounds per square foot.

In property rooms, one hundred (100) pounds per square foot.

In attics not used for storage, twenty (20) pounds per square foot.

On roofs, forty (40) pounds per square foot.

Section 30. [Heating and ventilating.] A *heating* system shall be installed which will uniformly heat all parts of the building to a temperature of sixty-five (65) degrees in zero (0) weather.

All parlors, retiring, toilet and check rooms, and all assembly halls used in connection with and a necessary adjunct to a church, school building, lodge building, club house, hospital or hotel shall be heated by an indirect system combined with a system of ventilation which will change the air not less than six times per hour. All other assembly halls and theater auditoriums shall be heated and ventilated by a system which will supply to each auditor not less than 1,200 cubic feet of air. [per hour.]

The system to be installed where a change of air is required shall be either a gravity or mechanical furnace system, gravity indirect steam or hot water, or a mechanical indirect steam or hot water system.

No stove or open grate shall be used in any theater or assembly hall, except water heaters, furnaces and boilers.

No stove pipe shall be more than five (5) feet long, measuring horizontally, unless the same be enclosed in a standard fireproof heater room, nor shall any stove pipe come closer to any combustible material or ceiling than three (3) feet.

The fresh air supply shall be taken from outside the building and no vitiated air shall be reheated. The vitiated air shall be conducted through flues or ducts to and be discharged above the roof of the building.

capacity, and it shall be assumed that the audience will be equally divided between males and females.

If lavatories are used the same shall have no waste plugs or stoppers, except lavatories placed in the dressing rooms used in connection with the stage.

Toilet rooms for males shall be clearly marked "Men's toilet" and for females "Women's toilet."

If a water supply and sewerage system are not available no sanitary equipment shall be installed within the building, but pumps (in lieu of drinking fountains), closets and urinals in the above proportion shall be placed on the theater or assembly hall grounds and no water closet or urinal shall be placed nearer any occupied building than twenty (20) feet.

Where pumps or hydrants are used the outlets shall be inverted.

Section 32. [Oil lamps.] No fixed or portable oil lamps shall be used in or about any stage containing scenery.

Oil lamps may be used for illuminating theater auditoriums or assembly halls when electric current or gas is not available, providing the same are placed not less than six (6) feet above the floor line, not less than three (3) feet below the ceiling, not less than one foot from any wall and are rigidly supported.

Section 33. [Gas lighting.] No gas light-
ny kind shall be used on any stage con-
scenery (except for exit lights) nor in

any property room, storage room, scene dock or fly gallery. Gas may be used for illuminating all other parts of theaters and assembly halls.

Gas fire may be used for heating water, glue, etc., providing the burners are inclosed in iron jackets.

If gas lighting is used in the auditorium and not kept lighted during the entire entertainment or performance there shall be at least two separate and distinct services where practicable, fed from separate street mains, one service of sufficient capacity to supply emergency lights and the other to supply all other outlets in the building.

Under "emergency lights' are included exit lights and all lights in lobbies, stairways, corridors and other parts of the theater or assembly hall to which the public have access, which are normally kept lighted during the performance.

Where gas is used for emergency lights, the outlets shall be placed, equipped with signs, and be kept buring as called for under electric work. (See auditorium lighting. Section 34.)

Each gas supply main shall be provided with a properly installed service cock placed outside of the building.

No swinging or movable gas fixtures or brackets shall be used.

Section 34. [Electrical work.] Where approved devices are mentioned the same shall be of such material, construction, mechanism and design as prescribed under the inspection rules and tests specified in the electric code.

In assembly halls in which the auditorium is kept lighted during the entire performance or entertainment all wiring shall be done in approved conduit and be installed according to the electric code.

In theaters and assembly halls in which the auditorium is not kept lighted during the entire performance or entertainment, and in all theaters containing motion picture machines or scenery, the electric equipment shall be installed according to the following requirements:

SERVICES. 1. Where source of supply is outside of building there shall be at least two separate and distinct services where practicable, fed from separate streets mains, one service to be of sufficient capacity to supply current for the entire equipment of the theater, while the other service shall be at least of sufficient capacity to supply current for all emergency lights. By "emergency lights" are meant exit lights and all lights in lobbies, stairways, corridors and other portions of theater to which the public have access which are normally kept lighted during the performance.

2. Where the source of supply is an isolated plant within the same building, an auxiliary service of at least sufficient capacity to supply all emergency lights shall be installed from some outside source, or a suitable storage battery within the premises will be considered the equivalent of such service.

STAGE. 1. All permanent construction on stage side of the prosecenium wall shall be approved conduit or armored cable, with the exception of border and switchboard wiring.

2. Switchboard shall be made of non-combustible non-absorptive material, and where accessible from stage level shall be protected by an approved guard rail to prevent accidental contact with live parts on the board.

FOOTLIGHTS. 1. Shall be wired in approved conduit or armored cable, each lamp receptacle shall be enclosed within an approved outlet box or the whole may be enclosed in a steel trough, metal to be of a thickness not less than No. 20 B. & S. gauge, or each lamp receptable may be mounted on or in an iron or steel box so constructed as to enclose all wires and live parts of receptables.

2. Shall be so wired that no set of lamps requiring more than 1,320 watts will be dependent on one cut-out.

BORDERS. 1. Shall be constructed of steel of a thickness not less than No. 20 B. & S. gauge, treated to prevent oxidation, be suitably stayed and supported by a metal frame work, and so designed that flanges of the reflectors will protect the lamps.

2. Shall be so wired that no set of lamps requiring more than 1,320 watts will be dependent upon one cut-out.

3. Shall be wired in approved conduit or armored cable, each lamp receptacle shall be enclosed within an approved outlet box or the whole may be enclosed in a steel trough, or

each lamp receptacle may be mounted on or in the cover of a steel box so constructed as to enclose all the wires and the live parts of the receptacles and metal shall be of a thickness not less than No. 20 B. & S. gauge.

4. Shall be provided with suitable guards to prevent scenery or other combustible material coming in contact with lamps.

5. Cables shall be made up of approved stranded rubber-covered wires; conduit construction shall be used from switchboard to a point where cables must be flexible to permit of the raising and lowering of border, and flexible portion shall be enclosed in an approved fireproof hose or braid and be suitably supported.

An approved junction box shall be installed at the end of the conduit where the flexible cable leaves for the border.

6. For the wiring of the border proper, wire with approved slow-burning insulation shall be used.

7. Shall be suspended with wire rope, (same) [and] shall be insulated from border by at least two approved strain insulators properly inserted.

Stage Pocket. Shall be of approved type controlled from the switchboard, each receptacle shall be of not less than fifty (50) amperes rating and each receptable shall be wired with a separate circuit to its full capacity.

PROSCENIUM SIDE LIGHTS. Shall be so installed that they cannot interfere with the operation of or come in contact with the curtain.

SCENE DOCKS. Where lamps are installed in scene docks they shall be so located and installed that they will not be liable to mechanical injury.

CURTAIN MOTORS. Shall be of ironclad type and installed so as to conform to the requirements of the electric code.

CONTROL FOR AUTOMATIC VENTILATORS. 1. No automatic stage ventilator shall be operated electrically unless the same be also so operated automatically and manually as previously called for under section 16.

DRESSING ROOMS. 1. Shall be wired in approved conduit or armored cable.

2. All pendent lights shall be equipped with approved re-inforced cord, armored cable or steel armored flexible cord.

3. All lamps shall be provided with approved guards.

PORTABLE EQUIPMENTS. (1) Arc lamps used for stage effects shall conform to the following requirements:

a. Shall be constructed entirely of metal except where the use of approved insulating material is necessary.

b. Shall be substantially constructed and so designed as to provide for proper ventilation, and to prevent sparks being emitted from lamps when same is in operation, and mica shall be used for frame insulation.

c. Front opening shall be provided with a self-closing hinged door frame in which wire gauze or glass shall be inserted, excepting lens lamps, where the front may be stationary, and a solid door shall be provided on back or side.

d. Shall be provided with a one-sixteenth (1-16) inch iron or steel guard having a mesh not larger than one (1) inch, and be substantially placed over top and upper half of sides and back of lamp frame; this guard shall be substantially riveted to frame of lamp and shall be placed at a distance of at least two (2) inches from the lamp frame.

e. Switch on standard shall be so constructed that accidental contact with any live portion of same will be impossible.

f. All stranded connections in lamp at switch and rheostat shall be provided with approved lugs.

g. Rheostat, if mounted on standard shall be raised to a height of at least three (3) inches above the floor line, and in addition to being properly enclosed shall be surrounded with a substantially attached metal guard having a mesh not larger than one (1) square inch, which guard shall be kept at least one (1) inch from outside frame of rheostat.

h. A competent operator shall be in charge of each are lamp, except that one operator may have charge of two lamps when they are not more than ten (10) feet apart, and are so located that he can properly watch and care for both lamps.

BUNCHES. *1.* Shall be substantially con-

structed of metal and shall not contain a
posed wiring.

2. The cable feeding same shall be bu
an approved manner where passing thro
metal and shall be properly secured to
any mechanical strain from coming on tl
nection.

Strips. 1. Shall be constructed o
of a thickness not less than No. 20 B
gauge, treated to prevent oxidation, and
stayed and supported by metal framework

2. Cable feeding strips shall be bus
an approved manner where passing throu
metal, and shall be properly secured to
any mechanical strain from coming on tl
nection.

Portable Plugging Boxes. Shall b
structed so that no current-carrying pa
be exposed, and each receptacle shall
tected by approved fuses mounted on s
bases and enclosed in a fireproof
equipped with self-closing doors. Each
tacle shall be constructed to carry thirt
amperes without undue heating, and b
shall have a carrying capacity equivalent
current required for the total number
ceptacles, allowing thirty (30) amperes
receptacle, and approved lugs shall be p
for the connection of the master cable.

Pin Plug Conductors. 1. When of a
type may be used to connect approved
lights and appliances.

2. Shall be so installed that the "
part of the plug will be on the live

cable, and shall be so constructed that tension on the cable will not cause any serious mechanical strain on the connections.

LIGHTS ON SCENERY. Where brackets are used they shall be wired entirely on the inside, fixture stem shall come through to the back of the scenery and end of stem shall be properly bushed.

STRING OF FESTOONED LIGHTS. Wiring for same shall be approved cable, joints where taps are taken from same for lights shall be properly made, soldered and tap(p)ed, and where lamps are used in lanterns or similar devices lamps shall be provided with approved guards. Where taps are taken from cable, they shall be so staggered, that joints of different polarity will not come immediately opposite each other and shall be properly protected from strain.

SPECIAL ELECTRICAL EFFECTS. Where devices are used for producing special effects such as lighting, water falls, etc., the apparatus shall be so constructed and located that flames, sparks, etc., resulting from the operation cannot come in contact with combustible material.

AUDITORIUM. 1. All wiring shall be installed in approved conduit or armored cable.

2. All fuses used in connection with lights illuminating all parts of the building used by the audience shall be installed in fireproof enclosures, so constructed that there will be a space of at least six (6) inches between the fuses, and the sides and face of enclosure.

EXIT LIGHTS. Shall have not more than one set *of fuses between* same and service fuses.

Exit lights and all lights in halls, corridors or any other part of the building used by the audience, except the general auditorium lighting shall be fed independently of the stage lighting and shall be controlled only from the lobby or other convenient place in front of the house.

Under "exit" lights are included lights over all stairways and tunnels leading from the auditorium, balconies or galleries, lights over every door leading from the auditorium, balcony or galleries to streets, alleys, open courts or lobbies, in fact all lights as may be necessary to lead or direct the audience from the auditorium, balconies or galleries to such parts of the building as are normally kept lighted, or to streets, alleys or open courts.

Under "exit" lights are also included such lights as may be necessary to lead or direct all performers, stage employes including all persons on or about the stage, to public streets, alleys or open courts.

Over each and every exit light shall be placed a box or receptacle not less than six (6) inches by six (6) inches by twelve (12) inches, made of galvanized iron of not less than twenty (20) B. & S. gauge or other incombustible material of equal weight and stiffness. Over each box or receptacle shall be placed a sign with the word "EXIT" in plain block transparent red letters not less than five (5) inches high.

Where necessary, signs shall also contain an illuminated arrow pointing to the means of egress.

Every portion of the theater devoted to the use or accommodation of the public, also all outlets leading to the streets and including all open courts, corridors, stairways, exits and inclosed fireproof stairways, shall be well and properly lighted during every performance, and the same shall remain lighted until the entire audience has left the premises.

Section 35. [Finishing hardware.] All entrance and exit doors shall be equipped with hardware of such a nature as to be always unlockable from within.

Single outside doors used for exit purposes only, shall have a one-knob latch, or a double extension bolt as hereinafter mentioned and no bolts, hooks or other locking device shall be used on these doors.

Single outside doors used for ingress and egress, shall have key locks that can be locked from the outside only, but can always be opened from the inside by simply turning the knob or lever, or by pushing against a bar or plate. No night lock attachment shall be placed on the face of these locks or other bolts, hooks, thumb latch or other locking device shall be used.

One of each pair of outside or inside double doors shall have a double extension bolt on same, bolts to be operated by knob, lever, push bar, push plate, push handle or other device whereby the simple act of turning a knob or lever or pushing against a bar, plate or handle will release the top and bottom bolts at the same time.

No independent top and bottom bolts shall be used.

Locks on these doors shall be the same as above called for, for single doors used for egress, or egress and ingress.

All bolts, latches, faces of locks, working parts of extension bolts and other exposed working parts about this hardware shall be of cast metal properly protected from corrosion.

Exit windows with sliding sash shall be provided with sash locks and two bar sash lifts, and hinged sash with either a sash lock, a one-knob latch or a lever bolt.

Section 36. [Fire extinguishers.] Where a water supply of sufficient pressure is available the following standard stand pipes with lines of one and one-half (1½) inch hose shall be installed.

Theaters and assembly halls less than thirty (30) feet wide and less than one hundred (100) feet long, shall have stand pipes and hose placed as follows: one in the balcony, one at the rear of auditorium, one on the stage and one under the stage.

Theaters and assembly halls more than thirty (30) feet wide or more than one hundred (100) feet long shall be provided with stand pipes and hose placed as follows, viz.: one in auditorium; one in each balcony and gallery; one on each side of the stage; one in each fly gallery and one on each side of basement under the stage.

The above lines of hose shall not be more than seventy-five (75) feet long, and where lines of hose of the above length will not reach the extreme portions of the building additional stand pipes and hose shall be installed.

Where water supply of sufficient pressure is available automatic sprinklers operated by fuses shall be placed over the stage and in each property room, carpenter shop and paint room. Automatic sprinkler over the stage shall be placed not more than six (6) feet from the stage walls and between these points shall be spaced in both directions not more than ten (10) feet on centers.

Sprinklers shall be so designed as to operate at a temperature of from one hundred and sixty (160) to one hundred and sixty-five (165) degrees Fahrenheit.

Where water supply of sufficient pressure is not available, or where available is not of sufficient pressure to reach the various parts of the building for which the same is intended, in lieu of stand pipes and hose, standard chemical fire extinguishers shall be provided as follows:

In theaters and assembly halls less than thirty (30) feet wide and not more than one hundred (100) feet long, chemical fire extinguishers shall be placed as follows: one in the heater room, two on the stage, two under the stage, one in dressing room section, two in auditorium, two in balcony and one in box office. In theaters and assembly halls more than thirty feet (30) wide or more than one hundred (100) feet long, chemical fire extinguishers shall be installed as follows: two on each side of stage, two in basement under stage, two in each fly gallery, one in each *property* room, one in each scene dock, one to every four dressing rooms or less, o each foyer, one in each women's and men tiring or toilet room, and one in each torium, balcony and gallery to each two sand (2,000) square feet of floor space or

All extinguishers shall be prominently ex to view and always accessible.

Section 37. [Fire proof paint.] All manent stage scenery, curtains and decor made of combustible material belonging t building and all of the wood work on, a or below the stage, shall be painted or sat with some non-combustible material or othe rendered safe against fire.

Section 38. [Aisles and passageways n be blocked.] All aisles, foyers and pas ways in assembly halls and theaters sha kept free from camp stools, chairs, sofas other obstructions, and no person shall lowed to stand in or occupy any of the foyers or passageways during the performa entertainment.

Section 39. [Hooks and axes.] A containing scenery and less than thirty (30 wide shall be provided with one fireman and one twelve (12) foot hook.

A stage containing scenery and more thirty (30) feet wide shall have one fo (14) foot hook in each fly gallery and o each side of the stage.

A stage containing scenery and more thirty (30) feet wide shall have one fire ax in each fly gallery, one on each side stage, and one on each side of the basement under the stage. All hooks and axes shall be prominently exposed to view and always accessible.

Section 40. [Summer theaters and air domes.] Summer theatres or air domes if built in "urban" districts located thirty (30) feet distant from any other building or structure, or adjoining lot lines, and at least two hundred (200) feet outside of the city fire limits, of no greater seating capacity than seven hundred and fifty (750) persons, not more than one story high, without balconies or galleries, may be constructed as follows:

The auditorium without a cellar or basement, with open sides or double the means of ingress and egress hereinbefore provided, opening directly into the surrounding courts or gardens at the grade level, may be built of frame construction providing the entire interior of the building including the stage, dressing rooms, property rooms, scene dock, storage rooms and auditorium are lathed with metal lath and are plastered.

No tent, awning or similar device shall be used as a roof covering over the auditorium, otherwise summer theaters and air domes shall be constructed and equipped as previously mentioned under this title.

Section 41. [Roof gardens.] No roof garden or roof theater shall be placed on the roof of any building unless the entire building is of fire proof construction, and no part of the said roof garden or roof theater, shall be enclosed by walls or [be] covered by roofs except the stage and the necessary appurtenances thereto.

Section 42. [Minor theatres.] When an assembly hall or room of any academy, school, college, or other educational institution, or a concert hall in any club house or hotel, or the lodge room of a temple or place of assemblage of fraternal or other organizations, either for the exclusive use of the members or for the public at large, contains a stage and a limited amount of scenery as hereinafter described, such hall, room or place of assemblage is classified as a minor theater and such minor theaters shall comply with all the prescribed conditions for theaters and assembly halls, with the exception of the following modifications for the stage.

A minor theater stage containing not to exceed one permanent set of scenery, the entire set including the drop curtain containing not to exceed six hundred (600) square feet of surface, all scenery fireproofed as called for under section No. 37 and containing no transient scenery, may be used in connection with an assembly hall and need not be provided with fire stops, asbestos curtain or stage ventilator; otherwise such a minor theater shall be designed, constructed and equipped as prescribed for assembly halls.

A minor theater stage built in excess of the above requirements but containing not to exceed three entrances (scenery term) not over fifteen (15) feet deep, not over twenty-five (25) feet wide, all scenery fireproofed as called for under section No. 37 and containing no traps or *transient* scenery, may be built in connection with an assembly hall under the following conditions, viz., the stage shall be separated from the auditorium or other parts of the building by standard fire walls and all communicating openings through these walls shall be covered by standard automatic or self closing fire doors; if the stage is built above or below other rooms or apartments the stage shall be separated from the other rooms or apartments by fire proof walls, ceilings and floors, the area of the automatic stage ventilator may be reduced to one-sixteenth (1-16) the area of the stage; the proscenium opening shall be covered by a curtain as called for under section No. 17, otherwise the stage shall be designed, constructed and equipped as prescribed for theaters, and the auditorium shall be designed, constructed and equipped as prescribed for assembly halls.

Buildings containing a stage built in excess of the above requirements shall be designed, constructed and equipped as prescribed for theaters.

OHIO STATE BUILDING CODE.

PART 2.

SPECIAL REQUIRBMENTS.

Title 3

SCHOOL BUILDINGS.

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Title 3.

SCHOOL BUILDINGS.

. **[Classification.]** Under the classi-
school buildings are included all
ochial and private schools, colleges,
seminaries, libraries, museums and
s, including all buildings or struc-
ining one or more rooms used for
ling of persons for the purpose of
nowledge, or for mental training.

Under this grade are included all
uildings appropriated to the use of
ammar or high schools, including all
uildings used for school purposes by
tudents eighteen (18) years old o

Under this grade are included al
uildings appropriated to the use o
leges, academies, seminaries, libraries
ınd art galleries; including all rooms
s not *included* under grade "A".

Section 2. [Class of construction.] Grade A. Where the main first floor line is eight (8) feet or more above the grade line at any entrance to or exit from any story above the basement, the basement shall be rated as the first story. Stories over fifteen (15) feet high, measuring from the floor to the ceiling line shall be rated as two stories. All buildings more than two stories high shall be of fireproof construction.

All buildings two stories high and less shall be of fireproof or composite construction.

No school building of grade A shall be built more than three (3) stories high.

Grade B. Where any floor level is more than twenty-six (26) feet above the grade line at any entrance to or exit from the building, the building shall be of fireproof construction.

Where floor levels are less than twenty-six (26) feet above the grade line at any entrance to or exit from the building, the building shall be of composite or fireproof construction.

No school building of grade B shall be built more than five stories high nor shall the topmost floor level be more than fifty (50) feet above the grade line at any entrance to or exit from the building.

Grades A and B. Exceptions. All buildings one story high, without basement and with the floor line not more than four (4) feet above the grade line shall be of fireproof, composite or frame construction, providing when built of *frame* construction the same is erected thirty *(30)* feet away from any other building st ture or lot line, and two hundred (200) feet beyond the city fire limits.

Section 3. [Exposure and courts.] EXPOSURE. No building of grade B shall occupy more than ninety-five (95) per cent of a corner lot nor more than ninety (90) per cent of an interior lot or site.

No building of grade A shall occupy more than seventy-five (75) per cent of a corner lot nor more than seventy (70) per cent of an interior lot or site. The measurements being taken at the lowest tier of floor joists.

No wall of any building coming under this classification containing windows used for lighting school or class rooms shall be placed nearer any opposite building, structure or property line than thirty (30) feet.

COURTS. By inner court is meant an open shaft or court, surrounded on all sides by walls.

By recess court is meant an open air shaft or court, having one side or end opened, and when such opening is on a lot line, it is an inner court.

Recess or inner light courts may be used, providing the least distance between any two opposite walls containing windows for lighting class and school rooms is equal to the height from the lowest window sill to the top of the highest cornice or fire wall. All walls to inner or recess courts shall be of masonry or other fireproof construction (except for buildings of frame construction.)

No inner or recess court shall be covered by a roof, skylight, or other obstruction.

If area ways are used for lighting basemen the width of the area shall be not less th equal to the height from the lowest window s to the top of the adjoining grade line.

Section 4. [Sub-divisions and fire stops Buildings of this classification built in conne tion with a building of a lower grade of cc struction, shall be separated from the ot parts of the building by (a) standard fire wal and all communicating openings in these wa shall be covered by double standard fire doo using self closing door on one side of the w and an automatic fire door or an automatic rc ing steel shutter on the other. The automa shutters or doors for openings used as a mea of ingress or egress shall be kept open duri the occupancy of the building.

All rooms or apartments used for gene storage, storing of furniture, carpenter sho general repairing, paint shops or other equa hazardous purposes shall be constructed w fireproof walls, ceilings and floors, and all op ings between these rooms or apartments and t other parts of the building shall be covered double standard fire doors, using a self closi door on one side of the wall and an automa firedoor or an automatic rolling steel shutter the other.

No open wells communicating between any t stories shall be used, except the necessary sta and elevator walls.

All exterior and court walls of buildings co ing under this classification (except buildi of frame construction) within thirty (30) f of any other building, structure or lot line shall be provided with the following fire stops, viz.:

Walls shall be standard fire walls.

All windows shall be automatic standard fireproof windows, and all door openings shall be covered by standard hinged fire doors without any automatic attachments.

Section 5. [Heater Room.] Furnaces, hot water heating boilers and low pressure steam boilers may be located in the buildings, providing the heating apparatus, breeching, fuel room and firing room are inclosed in a standard fireproof heater room, and all openings into the same are covered by standard self closing fire doors.

No boiler or furnace shall be located under any lobby, exit, stairway or corridor.

No cast iron boiler carrying more than 10 pounds pressure or steel boiler carrying more than 35 pounds pressure shall be located within the main walls of any school building.

Section 6. [Basement rooms.] No room(s) used for school purposes shall be placed wholly or partly below the grade line. Rooms for domestic science, manual training and recreation may be placed partly below grade, provided the same are properly lighted, heated and ventilated.

Section 7. [Dimensions of school and class rooms.] FLOOR SPACE. The minimum floor space to be allowed per person in school and class rooms, shall not be less than the following, viz.:

Primary grades sixteen (16) square feet per person.

Grammar grades eighteen (18) square feet per person.

High schools twenty (20) square feet per person.

All other school and class rooms twenty-four (24) square feet per person.

CUBICAL CONTENTS. The gross cubical contents of each school and class room, shall be of such a size as to provide for each pupil or person not less than the following cubic feet of air space, viz.: Primary grades 200 cubic feet, grammar grades 225 cubic feet, high schools 250 cubic feet and in grade B buildings 300 cubic feet.

HEIGHT OF STORIES. Toilet, play and recreation rooms shall be not less than eight (8) feet high in the clear measuring from the floor to the ceiling line.

The height of all rooms, except toilet, play and recreation rooms shall be not less than one-half the average width of the room, and in no case less than ten (10) feet high.

CAPACITY OF ROOMS. The plans shall be clearly marked showing the maximum number of pupils or persons to be accommodated in each room.

Section 8. [Rest rooms.] In all school buildings of grade "A" containing four and not more than eight school or class rooms, a rest or hospital room shall be provided, and in all school buildings of grade "A" containing more than eight school or class rooms, two such rooms shall be provided.

These rooms shall be provided with a couch and supplies for first aid to the injured, and where water supply is available shall be provided with water closets and sinks.

Section 9. [Assembly halls.] A room seating or accommodating more than one hundred (100) persons shall be considered as an assembly hall.

No assembly hall in a building of grade A shall be located above the second story in a building of fireproof construction, nor above the first story in a building of composite construction.

Otherwise assembly halls shall be constructed and equipped as called for under part 2, title 1.

Section 10. [Seats, desks and aisles.] SECURING SEATS. Seats, chairs and desks placed in class, recitation, study and high school rooms seating more than fifteen (15) persons, shall be securely fastened to the floor. Desks and chairs used by the teachers may be portable.

ASSEMBLY HALL SEATS AND AISLES. Assembly hall seats and aisles shall be as called for under part 2, title 1.

CLASS ROOM SEATS AND AISLES. Class and school rooms shall have aisles on all wall sides. In primary rooms, center aisles shall not be less than seventeen (17) inches, and wall aisles not less than two feet four inches (2′ 4″) wide. In grammar rooms, center aisles shall not be less than eighteen (18) inches and wall aisles not less than two feet six inches (2′ 6″) wide. In high school rooms, center aisles shall not be less than twenty (20) inches and wall aisles not less than *three (3)* feet [wide.]

In all other class and school rooms, ce
aisles shall not be less than twenty-four inches, and wall aisles not less than three feet [wide.]

Section 11. [Optics.] The proportioı glass surface in museums, libraries and art leries, shall be not less than one (1) square of glass to each six (6) square feet of area.

The proportion of glass in each class, s recitation, high school room and laboratory, not be less than one (1) square foot of to each five (5) square feet of floor area. glass surface in rooms used for domestic sc and manual training, see part 2, title 7, w shops, factories and mercantile establishme

The proportion of glass surface in each toilet or recreation room, shall be not less one (1) square foot of glass to each ten square feet of floor area.

Windows shall be placed either at the or the left and rear of the pupils when seat

Tops of windows, except in libraries, mus and art galleries shall not be placed more eight (8″) inches below the minimum ce height as established under section 7.

The unit of measurement for the width properly lighted room, when lighted from side only, shall be the height of the wi head above the floor.

The width of all class and recitation r when lighted from one side only, shall ı ceed two and one-half times this unit meas- ed at right angles to the source of light.

All windows shall be placed in the exterior lls of the building, except for halls, corridors, ck and supply closets which may be lighted ventilated skylights or by windows placed in erior walls or partitions.

Museums, libraries and art galleries may be hted by skylights, or clear story windows.

Section 12. [Means of egress.] All means egress or exit, shall be exit doors unless the ne lead to A standard fire escapes, which shall either exit doors or exit windows.

Grade A Buildings, of Fireproof Construction. ans of egress from rooms in the basement and erstructure shall be in proportion to three (3) t in width to each one hundred (100) per- s to be accommodated in building accommo- ing not more than five hundred (500) persons. When buildings accommodate from five hun- d (500) to one thousand (1,000) persons, two feet additional exit width shall be provided each one hundred (100) persons or fraction reof in excess of five hundred (500) persons. When buildings accommodate more than one usand (1,000) persons, one (1) foot addi- nal exit width shall be provided for each one ndred (100) persons or fraction thereof in ess of one thousand (1,000) persons, but in case shall an exit be less than three (3) t or more than six (6) feet wide.

No inclosed standard fireproof stairways or

fire escapes will be necessary for building
fireproof construction and all exits shall lea
the main corridors.

**Grade A. Buildings of Composite Const
tion.** Each room in the superstructure use
pupils as a class or school room, shall hav
least two separate and distinct means of eg

No class, school or high school room
have more than one door or opening betwe
and the main halls or corridors of the buil

Communicating doors between two clas
school rooms shall not be considered as a m
of egress.

The proportion of exits to the seating cap
shall not be less than three (3) feet to
one hundred (100) persons to be accommod

One-half of the exits shall lead to the
corridors, and the other half to inclosed
proof stairways, B, C or D standard fire esc
or stone, cement or iron steps leading to
grade line. No exit door shall be less
three (3) feet or more than six feet wide.
fire escape or outside stairway shall be
when the height of the same exceeds eight
feet above the grade line.

Each room in the basement used by the p
shall have a direct exit, not less than three
feet wide, with stone, cement or iron stair
leading up to the grade line. Stairways
be not less than three feet six inches (3′
wide.

Areaways around such stairways shall
substantial hand and guard rails on both

These exits shall be provided in addition to the usual service stairways and means of ingress.

GRADE B. BUILDINGS OF FIREPROOF OR COMPOSITE CONSTRUCTION. Each room or apartment used for any purposes other than storage shall have two separate and distinct means of egress. If the various rooms connect directly with a hallway, means of egress at each end of the hallway will be sufficient; providing however that it is not necessary to pass one means of egress in order to reach the other.

These means of egress shall be either an inside stairway running continuously from the grade line to the topmost story, or from the basement to the grade line; A, B, C or D standard fire escapes; stone, cement or iron steps leading to the grade line; or self-closing doors leading directly to the main corridor of an adjoining section of the same building containing a stairway.

Means of egress shall be at the rate of three (3) feet per hundred persons to be accommodated.

It shall be presumed that half the persons will go to either means of egress.

In libraries, museums, and art galleries, the capacity of the building shall be established by allowing each person fifteen (15) square feet of floor area in all lobbies, exhibition rooms, toilet rooms, corridors, stairs and other public parts of the building.

GRADE A AND B. BUILDING OF FRAME CONSTRUCTION. Each room shall have at least, two, three (3) *foot exits* one leading to the open with steps to the grade, and the other the usual means of ingress; and all steps shall have hand rails on both sides.

SIGNS. Over each exit door shall be painted a sign indicating the word EXIT in plain block letters not less than six (6) inches high.

Section 13. [Stairways.] GRADE A. BUILDINGS OF FIREPROOF CONSTRUCTION. Buildings of fireproof construction shall have at least two stairways located as far apart as possible and the same shall be continuous from the grade line to the topmost story.

The basement shall have at least two stairways located as far apart as possible and run from the basement floor level to the grade line, which stairway may be placed under the main stairway. No further means of egress will be necessary.

Stairways shall be enclosed with masonry (of) [or] fireproof walls with standard self-closing fire doors at each story, and shall be provided with platforms and exit doors not less than three (3) feet wide at the grade line.

GRADE A. BUILDINGS OF COMPOSITE CONSTRUCTION. Basement stairways shall be enclosed with either brick walls not less than nine (9) inches thick, concrete walls [not less than] six inches (6″) thick, or hollow tile walls [not less than] twelve inches (12) thick.

All openings in these walls shall be provided with standard self-closing fire doors. The width of stairways required under this classification shall be equally divided, one-half being placed *in the main* service stairways and the other half in the enclosed fireproof stairs or fire escapes. No closet for storage shall be placed under any stairway.

GRADE B. BUILDINGS OF FIREPROOF CONSTRUCTION. Stairways shall be separated from the other parts of the building by masonry or fireproof partitions with standard self-closing fire doors.

Wire glass not less than one-quarter inch (¼") thick, set in stationary metal sash and frames may be used in place of stairway partitions. No wire glass shall be placed in partitions separating stairways from work or storage rooms containing highly combustible material.

Stairways shall be provided with grade line platforms with exit doors not less than three (3) feet wide leading to streets, alleys or open courts.

GRADE B. BUILDINGS OF COMPOSITE CONSTRUCTION. In buildings of composite construction the stairways shall be separated from the other parts of the building by masonry or fireproof walls, with fireproof ceiling at the topmost story, with fireproof floor at the lowermost level, and all openings to these inclosures shall be provided with standard self-closing fire doors.

The above enclosures shall be provided with grade line platforms, and with exit doors not less than three (3) feet wide leading to streets, alleys or open courts.

No closet for storage shall be placed under any stairway.

MONUMENTAL STAIRS. Monumental stairs from the basement to the second story may be used in buildings of grade B, providing they are placed as far distant from the other stairways as possible.

Stairway Construction. Width of stairways shall be at the (rate) [ratio] of three feet per one hundred (100) persons accommodated in buildings accommodating not more than five hundred (500) persons, when building accommodates from five hundred (500) to one thousand (1,000) persons two feet of additional stairway width shall be provided for every one hundred (100) persons or fraction thereof in excess of five hundred (500), when buildings accommodate more than one thousand (1,000) persons, one foot additional stairway width shall be provided for every one hundred (100) persons or fraction thereof in excess of one thousand (1,000) persons.

No stairway shall be less than three feet six inches (3′ 6″) nor more than six (6) feet wide measuring between the hand rails. Stairways over six (6) feet wide shall have substantial center hand rails with angle and newel posts not less than six (6) feet high. No stairway shall have less than three (3) nor more than sixteen (16) risers in any run.

No stairway shall have winders and all nosing shall be straight.

A uniform width shall be maintained in all stairways and stair platforms by rounding the corners and beveling the angles.

Hand rails shall be provided on both sides of *all stairways* and steps.

Outside stairways and areaways shall be provided with guard rails not less than two feet six inches (2′ 6″) high.

Stairways shall have a uniform rise and tread in each run as follows, viz.:

Primary schools shall have not more than a six (6) inch rise nor less than eleven (11) inch tread.

Grammar schools shall have not more than a six and one-half (6½) inch rise nor less than eleven (11) inch tread.

All other schools shall have not more than a seven (7) inch rise nor less than ten and one-half (10½) inch tread.

The above dimensions shall be from tread to tread, and from riser to riser.

No door shall open directly upon a stairway, but shall open on a platform or landing equal in length to the width of the door.

In combination primary and grammar school buildings all stairways below the first floor level shall be designed for primary school pupils, and all stairways above the first floor level may be designed for either primary or grammar pupils.

No closet for storage shall be placed under any stairway.

All treads shall be covered with rubber or lead mats or equal non-slipping surface.

Section 14. [Gradients.] To overcome any difference in floor levels which would require less than three risers, gradients shall be employed of not over one (1) inch rise in twelve (12) *inch run.*

Floors at all exits shall be so designed as to be level and flush with the adjacent floors.

Section 15. [Passageways.] No hall or passageway leading to a stairway or exit shall be less in width (of) [than] the stairway or exit, as the case may be.

Halls and passageways shall be so designed and proportioned as to prevent congestion and confusion.

Section 16. [Elevators.] Elevators shall be enclosed in standard fire walls, or by fire proof walls, ceilings and floors, and all openings to the enclosure shall be covered by standard fire doors for elevators.

Section 17. [Exit doors and windows.] Exit doors shall not be less than three (3) feet wide, nor less than six feet four inches (6′ 4″) high, level with the floor, swing outward, viz.: towards the open, or towards the natural means of egress, and shall be so hung as not to interfere with passageways or close other openings.

No single door or leaf to a double door shall be more than four (4) feet wide. No two doors hinged together shall be used as a means of ingress or egress. Accordion doors may be used in dividing class rooms, providing the free sections swing outward and give the required amount of exit width.

No double acting, rolling, sliding or revolving exit or entrance doors shall be used.

Exit windows leading to "A" standard fire escapes shall have the lower sash hinged to the side to swing out, or hung on weights to (rise) [raise]. This sash shall not be less than two feet six inches (2′ 6″) wide, not less than three (3) feet high and not more than two (2) feet above the floor line.

Section 18. [Scuttles.] Every building exceeding twenty-five (25) feet in height shall have in the roof a bulk-head or scuttle not less than two (2) feet wide and not less than three (3) feet long, covered on the outside with metal and provided with a stairway or permanent ladder leading thereto.

Bulk-head and scuttle doors shall never be locked.

Section 19. [Special construction.] All floors to toilet rooms, lavatories, water closet compartments, or any enclosure where plumbing fixtures are used within the building, shall have a waterproof floor and base made of non-absorbent indestructible waterproof material, viz.: Asphalt, glass, marble, vitrified or glazed tile or terrazzo, or monolithic composition.

Base shall be not less than six (6) inches high and shall have a sanitary cove at the floor level.

All basement rooms used by the pupils or public shall have a damp[proof] or waterproof floor.

All basement ceilings except where concrete or brick is used shall be plastered or be covered with pressed or rolled steel ceiling.

Whenever possible, window and door jambs shall be rounded and plastered, except in museums, libraries and art galleries.

All interior wood finish shall be as small as possible and free from unnecessary dust catchers.

All floors between the finished portions of the building shall be deadened or made sound proof.

Section 20. [Floor and roof loads.] In calculating construction the superimposed load uniformly distributed on the various floors and roofs shall be assumed at not less than the following, viz.:

Class rooms, sixty (60) pounds per square foot.

Halls, assembly halls, stairs and corridors, eighty (80) pounds per square foot.

Museums, libraries and art galleries, one hundred (100) pounds per square foot.

Attics not used for storage, twenty (20) pounds per square foot.

Roofs, forty (40) pounds per square foot.

Section 21. [Heating and ventilat (ion) ing.] A heating system shall be installed which will uniformly heat all corridors, hallways, play rooms, toilet rooms, recreation rooms, assembly rooms, gymnasiums and manual training rooms to a uniform temperature of 65 degrees in zero weather; and will uniformly heat all other parts of the building to 70 degrees in zero weather.

Exceptions. Rooms with one or more open sides used for open air or outdoor treatment.

The heating system shall be combined with a system of ventilation which will change the air in all parts of the building except the corridors, halls, and storage closets not less than six times per hour.

The heating system to be installed where a change of air is required, shall be either standard ventilating stoves, gravity or mechanical furnaces, gravity indirect steam or hot water; or a mechanical indirect steam or hot water system.

Where wardrobes are not separated from the class room they shall be considered as part of the class room and the vent register shall be placed in the wardrobe.

(These) [Where] wardrobe are separated from the class rooms, they shall be separately heated and ventilated the same as the class rooms.

The bottom of warm air registers shall be placed not less than eight (8) feet above the floor line, except foot warmers which may be placed in the floors of the main corridors or lobbies.

Vent registers shall be placed not more than two inches (2″) above the floor line.

The fresh air supply shall be taken from the outside of the building and no vitiated air shall be re-heated. The vitiated air shall be conducted through flues or ducts and be discharged above the roof of the building.

A hood shall be placed over each and every stove in the domestic science room, over each and every compartment desk or demonstration table in the chemical laboratories and chemical laboratory lecture rooms, of such a size as to receive and carry off all offensive odors, fumes and gases.

These ducts shall be connected to vertical *ventilating flues* placed in the walls and shall

be independent of the room ventilati
viously provided for.

Where electric current is available
haust fans shall be placed in the duc
from the stove fixtures in dome-
rooms and chemical laboratories,
electric current is not available and
hot-water system is used, the main
from the above ducts shall be
accelerating coils of proper size
cient draught to carry away all fume
sive odors.

Section 22. [Sanitation.] Wh
supply and sewerage system are ava
tary equipment shall be installed as

In the superstructure of the bui
and one drinking fountain shall
each floor to each six thousand
feet of floor area or less.

In the basement one sink and
fountain shall be installed on the
and the same on the females' side
hundred and fifty (350) pupils, or

Sinks shall be the ordinary slop
lieu of same, lavatories may be
the waste plug or stopper has

Sanitary schoolhouse drinking
jet giving a continuous flow of
installed, and no tin cups or
allowed in or about any school buil

In libaries, museums and art
shall be provided the followi

One water closet to **each**
females, or less.

[illegible] a
[illegible] be
[illegible])
[illegible] two,
[illegible] shall
[illegible]
[illegible] anced
[illegible] by
[illegible] and
[illegible] or
[illegible] section
[illegible] of
[illegible] ished.
[illegible] the
[illegible] ements,
[illegible] than
[illegible] line
[illegible] (2) feet

[illegible] STAIRS.
[illegible] hand rail
[illegible] one-fourth
[illegible] angle iron,
[illegible] by one-
[illegible] shall run
[illegible] the
[illegible] between hand
[illegible] strip of one
[illegible] inch flat

[illegible] shall be braced
[illegible] a bracket
[illegible] one-fourth

Where pumps or hydrants are used the outlet shall be inverted.

Buildings more than three stories in height shall be provided with toilet rooms in each story and basement, and in these shall be installed water closets and urinals in the above required ratios in proportion to the number of persons to be accommodated in the various stories.

Toilet rooms for males shall be clearly marked "Boys' toilet" or "Men's toilet" and for females "Girls' toilet" or "Women's toilet."

Section 23. [Gas lighting.] A system of gas lighting if used shall be installed as follows:

All outlets in class and recitation rooms shall be dropped from the ceiling and be equally distributed so as to uniformly light the room.

The number of burners provided shall not be less than the following:

In auditoriums one three (3) foot burner to each fifteen (15) square feet of floor area.

In gymnasiums one three (3) foot burner to each fifteen (15) square feet of floor area.

In halls and stairways one three (3) foot burner to each twenty-four (24) square feet of floor area.

In class and recitation rooms one three (3) foot burner to each twelve (12) square feet of floor area.

Enclosed fireproof stairways, service stairways, corridors, passageways and toilet rooms, shall be well lighted by artificial light and said lights shall be kept burning when the building is occupied after dark.

Burners shall be placed seven (7) feet above the floor line.

No swinging or movable gas fixtures or brackets shall be used.

Section 24. [Electric work.] An electric lighting system if used shall be installed as follows:

All wiring shall be done in conduit. All outlets in class and recitation rooms shall be dropped from the ceiling and be equally distributed so as to uniformily light the room.

The candle power of lamps provided shall not be less than the following, viz.:

Auditorium one candle power to two and one-half square feet of floor area.

Gymnasium one candle power to two and one-half square feet of floor area.

Halls and stairways one candle power to four square feet of floor area.

Class and recitation rooms one candle power to two square feet of floor area.

Enclosed fireproof stairways, service stairways, corridors, passageways and toilet rooms shall be lighted by artificial light, and said lights shall be kept burning when the building is occupied after dark.

Section 25. [Finishing hardware.] All entrance, exit and emergency doors shall be equipped with hardware of such [a] nature as to be always unlockable from within.

Single outside entrance doors shall have key locks that can be locked from the outside, but can always be opened on the inside, by simply *turning the knob* or lever, or by pushing against a bar or plate, whether same are locked on the outside or not, the locks being operated by key from the outside only. No night latch attachment shall be placed on face of these locks, or other bolts, hooks, thumb knobs or other locking device shall be placed on these doors.

Outside doors used for exit purposes only, including doors to inclosed fireproof stairways shall have one knob latch or a double extension bolt as hereinafter mentioned, and no bolts, hooks, or other locking device shall be placed on these doors.

Doors from halls to rooms and cloak rooms shall have no locks upon same, but shall be equipped with knob latches only. If locks are desired, the same style locks as above specified for entrance doors shall be used and the same shall be so placed on the door (so) that they can be locked on the hall side, and can always be opened on the room or cloak room sides, whether locked on hall side or not.

One of each pair of outside or inside double doors shall have a double extension panic bolt on same, bolt to have knob, lever, push bar, push plate, push handle, or device whereby the simple act of turning a knob, or lever, or pushing against the same will release the top and bottom bolts at the same time and allow the doors to open.

Independent top and bottom bolts shall not be used.

The outer door of each pair of outside and inside double doors shall have lock, or latch as *above specified.*

All bolts, latches, face of locks, working parts of extension bolts, and other exposed working parts about this hardware shall be of cast metal properly protected from corrosion.

Double box windows to A standard fire escapes shall be provided with sash locks and two bar lifts, and hinged sash with either a sash lock, one knob latch or lever bolt.

Section 26. [Fire Extinguishers.] Standard stand pipe and hose shall be provided in basement of grade A buildings and in each story and basement of grade B buildings with sufficient length of one and one-half (1½) inch hose to reach any part of the story.

Hose lengths shall not be more than seventy-five (75) feet, and where hose of such length will not reach the extreme portions of the story additional standpipes and hose shall be provided.

Where water supply is not available, standard chemical fire extinguishers shall be provided in the proportion of one (1) extinguisher to each two thousand (2,000) square feet of floor area or less.

Standard chemical fire extinguishers shall be provided in each story above the basement of grade A buildings in the proportion of one extinguisher to each two thousand (2,000) square feet of floor area, or less.

All fire extinguishers shall be prominently exposed to view and always accessible.

Section 27. [Fire alarm.] All buildings with basement, and all buildings over one story high shall be provided with eight (8) inch in diameter *trip* fire gongs with connections enabling the ringing of same from any story or basement.

In semi-detached buildings gongs shall be provided for each section and shall be connected up so as to ring simultaneously from any story or basement of either section.

Gongs shall be centrally located in the main halls, and the operating cords shall be placed so as to be always accessible.

EXCEPTIONS. In institutions for the deaf, electric lights with red globes shall be placed near each teacher's desk, and these shall be operated simultaneously by switches placed in each story and basement.

Section 28. [Blowers in workshops.] For blowers in workshops and factories, including rooms for manual training, see General Code, State of Ohio, section No. 1027.

Section 29. [Guarding machinery and pits.] For the necessary devices for guarding machinery and pits, see General Code, State of Ohio, section No. 1027.

OHIO STATE BUILDING CODE.

PART 3.

STANDARD DEVICES.

PREAMBLE TO PART 3.

Under the different titles of part 3 will be found detailed descriptions of, or specifications for the various standard devices to which reference is made under the several titles of part 2.

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PART 3.

STANDARD DEVICES.

Title 1.

STANDARD CONSTRUCTION.

Section 1. [Fireproof construction.] This classification includes such buildings as are built entirely of incombustible fire and water proof material, with all metal structural parts thoroughly fireproofed.

When the height of the building measured from the average grade line to the ceiling of the topmost story exceeds seventy-five (75) feet, the floors, doors, windows and the usual trim of the rooms shall be of incombustible materials.

When the height of the building measuring from the average grade line to the ceiling of the topmost story is seventy-five (75) feet or less, the floors, doors, windows and the usual trim of the rooms may be of the ordinary wood construction with no open air spaces behind the wood.

Section 2. [Mill construction.] This classification includes such buildings as have the enclosing walls and roof covering made of incombustible materials and wherein the post timbers are not less than 10x10 inches except those supporting the roof, which may be 8 x 8 inches, the main floor girders being not less than

10 inches in width and the girders next to the walls, and floor beams not less than 6 inches in width, roof girders not less than 8 inches in width and all beams and girders not less than 10 inches in depth, and where the floors are double and the under-flooring is not less than two and one-quarter (2¼) inches thick and the top flooring not less than seven-eighths (⅞) of an inch thick, with the under-flooring tongued and grooved, splined or laid on edge with broken joints and thoroughly spiked together and the upper flooring tongued and grooved and well nailed, and between which floors are laid at least two (2) thicknesses of water proofed fabric. The dimensions herein given are for timbers before being dressed.

Under this classification no wood girders or trusses shall be used to support masonry walls.

Section 3. [Composite construction.] This classification includes such buildings as have the inclosing walls and roof covering of incombustible materials with doors, windows and frames of wood, and the interior walls of brick; or, columns and girders made of fireproofed iron and steel, or with exposed wood girders containing not less than eighty (80) square inches of cross section or exposed wood posts containing not less than sixty-four (64) square inches of cross section; or with wood roof trusses built of timbers containing not less than sixteen (16) square inches; and with the floor construction of wood beams.

Under this classification no wood girders or *trusses shall* be used to carry masonry walls.

In buildings of this class a single thickness of metal lath or furring and hard incombustible plaster will be deemed sufficient protection for iron and steel columns and girders.

Section 4. [Frame construction.] This classification includes such buildings as have the inclosing and interior partition walls constructed entirely of wood.

Wood frames covered with brick, stone or other veneer shall be included in this class.

Note:—For a more complete description of the various classes of construction see subsequent parts of this code on general building construction.

Title 2.

STANDARD FIRE WALLS AND FIRE STOPS.

Section 1. [Standard fire walls.] Where standard fire walls are required the same shall start at the foundation (except for inner and recess courts beginning at a higher level); and when used in connection with buildings of fireproof construction shall be continued up to the highest fireproof slab, and when used in connection with buildings of mill, composite or frame construction, the same shall extend three (3) feet above the highest adjoining roof line and be capped with stone, tile or other indestructible material.

These walls shall be not less than the following, viz.: Brick not less than twelve (12) inches thick, monolithic concrete not less than eight

(8) inches thick, or a brick wall four (4) inches thick combined with a monolithic concrete wall six (6) inches thick.

Walls above the roof line shall be of the same thickness as walls in the topmost story. When necessary the above dimensions shall be increased as called for under subsequent parts of the code.

Section 2. [Fireproof walls, ceilings and floors.] Where masonry or fireproof walls, or fireproof ceilings and floors are called for under the various titles of part 2, including stairway and elevator enclosures, and fire stops between the different kinds of occupancy in the same building; the walls shall be of brick not less than twelve (12) inches thick or of monolithic concrete not less than eight (8) inches thick and the floor and ceilings shall be of not less than the following, viz.: Reinforced concrete four (4) inches thick, brick arches four (4) inches thick covered with one (1) inch of cement mortar and supported by fireproof steel with the necessary tie rods, or by hollow tile arches six (6) inches thick covered with two (2) inches on concrete, plastered on the under side and supported by fireproof steel with the necessary tie rods.

The above walls shall start from the foundation or shall be supported upon fireproofed steel girders and masonry piers, or fireproofed steel carried down to the foundation.

Where necessary the thickness of the above walls, floors and ceilings shall be increased as called for under subsequent parts of this code.

Openings placed in or through the above fireproof floors or ceilings shall be covered by standard fire doors.

Title 3.

STANDARD FIRE DOORS.

Section 1. [Number of doors and where used.] Where standard fire walls or fireproof walls, ceilings and floors divide a single building into two (2) or more different classes of occupancy, or party walls are used between two (2) different buildings, all communicating openings in such walls shall be covered by double standard fire doors.

Unless otherwise required under the various titles of part 2 the openings in these walls shall be provided with two sets of fire doors, using automatic standard fire doors, or standard rolling steel doors one side of the wall and standard self-closing fire doors on the other side.

Where masonry or standard fireproof walls and fireproof ceilings and floors are called for under the various titles of part 2, and are used to subdivide a building of one kind of occupancy into smaller floor areas or are used for enclosing elevators, or stairways or heater room, such openings shall be covered by single standard fire doors, and unless otherwise called for under the various titles of part 2 these doors shall be standard self-closing fire doors.

Section 2. [Openings in walls for standard fire doors.] Openings shall be as few and be made as small as the nature of the occupancy will permit, but in no case shall the gross ar of a single opening exceed eighty (80) squa feet.

Walls shall present a smooth masonry surfa without any exposed or unprotected wood trir mings.

Section 3. [Door sills for standard fi doors.] All openings between buildings (fireproof and non-fireproof construction and i buildings of non-fireproof construction standai fire doors and standard rolling steel shuttei or doors shall be provided with incombustib sills of either of the following styles, viz.: / B, C, (or) D or E.

In buildings of fireproof construction, stanc ard fire doors and standard rolling steel shuttei or doors shall be provided with incombustib sills of style F.

"A" SILL. Shall be of concrete not less tha four (4) inches in thickness and placed be tween three and one-half by five by three eighths (3½x5x⅜) inch angles on each side c the wall. Angles shall extend at least six (6 inches past the opening on each side. Long le of angle shall rest against the face of the wa and short leg of angle shall be placed flus with the surface of the concrete sill and adjoir ing floor, and extend out under the bottom c the door. Angles shall be fastened togethe through the concrete sill by three-quarter (¾ inch bolts placed close to each side of the wa opening and not over eighteen (18) inches o centers between these points. Bolts shall hav washers and nuts at each end.

Where sliding fire doors are used the upper surface of the angle shall be notched out at one end on each side of the wall or angles drilled and five eighths (⅝) inch bolts installed so as to permit the proper installation of the stay roll for holding the door in position. This shall be done before angles are installed.

Where the wall is rabbeted for swinging fire doors and where doors are not placed over the edge of the sill, an iron plate of not less than three-eighths by five (⅜x5) inches may be used in place of the angle iron or the angle may be installed so that the short leg will extend into the wall.

"B" SILL. Shall be constructed the same as an "A" sill, except that the upper surface of the concrete sill shall be covered by a one-quarter (¼) inch checkered steel plate extending out flush with the outer edges of the angles on each side of the wall, and held securely in position by three-eighths ⅜ inch counter sunk nachine screws spaced not to exceed nine (9) nches on centers.

"C" SILL. Shall be of concrete not less than hree and one-half (3½) inches in thickness and placed between a three and one-half by six by hree-eighths (3½x6x⅜) inch angle iron on each side of the wall.

Angle shall extend at least six (6) inches past he opening on each side. The short leg of he angle shall be parallel with and set out four (4) inches past the face of the wall, except on he side of the wall where no door is used the ace of the angle may be flush with the wall.

The long leg of the angle shall extend into the wall. Angles shall be fastened together through the concrete sill the same as required for "A" sills.

Two course of brick work shall be corbeled out to support the angle irons, the upper course to be one and one-half (1½) inches back from the perpendicular face of the angle. Or instead of angle irons and brick corbeling, Z bars made of two four (4) inch angles three-eighths (⅜) inch thick, bolted together, or equivalent Z bars may be used, the same being fastened together by three-quarter (¾) inch wall bolts through both perpendicular faces, and the thickness of the concrete shall be increased to seven (7) inches.

Where sliding fire doors are used, the angles or Z bars shall be drilled and five eighths (⅝) inch bolts installed so as to permit the proper installation of standard stay roll for holding the door in position. This shall be done before the steel work is placed in the sill.

Where the wall is rabbeted for a swinging fire door, an iron plate not less than three-eighths (⅜) inch thick and eight (8) inches wide may be used in place of the angle iron or Z bar on that side of the wall.

"D" SILLS. These shall be the same style as "C" sills, and shall be used where a great amount of heavy trucking is done, and when used the concrete shall be not less than six (6) inches thick, the iron shall be increased proportionately, and three course of brick shall be *corbeled out* to the outer edge of the sill.

"E" SILLS. Shall be of checkered steel plate not less than one-quarter (¼) inch in thickness, placed on concrete sub-sill not less than six (6) inches thick. Concrete support and steel plate shall be built into the wall at least six (6) inches on each side of the opening, and shall extend under and flush with the outer surface of the door. Three courses of the brick work under the sill shall be corbeled out flush with the outer surface of the sill under each door.

Where sliding fire doors are used, the steel plate shall be notched out at one end on each side of the walls so as to permit the proper installation of the stay roll for holding the door in position. This shall be done before the plate is installed.

NOTE:—In lieu of a cement wearing surface to concrete sills either marble not less than one and one-eighth (1⅛) inch thick or ceramic tile may be used.

"F" SILLS. Style F door sills shall be used only in buildings of fireproof construction.

Openings shall be provided with incombustible thresholds made of either checkered steel plates not less than one-quarter (¼) inch thick, marble, not less than one and one-eighth (1⅛) inch thick, ceramic tile, or concrete not less than three (3) inches thick; threshold shall extend at least six (6) inches past the opening on each side, and not less than two (2) inches beyond the face of the door on either side, and the entire area of the threshold shall be bedded in concrete carried down to the fireproof fl struction or to the wall below.

CONCRETE. Concrete for sills shall b of one (1) part Portland cement, two a half (2½) parts clean, sharp sand, and f parts clean broken stone which will pass a one (1) inch mesh. Concrete shall oughly mixed, well tempered, and where to view shall be finished smooth and fl the finished floor. Concrete shall be o mixture.

Section 4. [Lintels over standard fire Openings shall be covered by brick arc inforced concrete lintels with the met covered at all points with not less than inches of concrete; or, by steel beams th ly covered by fireproof hollow tile with of air spaces and with the tile covered less than one-half (½) inch coat of pla

Section 5. [Construction of stand doors.] WOODWORK. Core shall be r well seasoned white pine or similar non- wood. Stock shall be of good, sound practically free from sap and large knots. Boards shall be plain (not beade be tongued and grooved, dressed on bo and not to exceed eight (8) inches i Finished thickness of boards shall be sixteenths (13-16) inch full.

Doors shall be made of three thickn the above stock, the outside layers to be and the inner layers horizontal.

Layers shall be securely fastened tog

wrought iron clinch nails driven in flush and clinched so as to leave smooth surfaces on both sides of the door.

Door shall be nailed together by vertical and horizontal rows of nails spaced not over eight (8) inches apart in both directions, placing the outer row of nails near the edge of the door.

All edges and corners shall be smooth and square.

TIN COVERING. Doors shall be covered by prime terne plates of I. C. thickness and of fourteen (14) by twenty (20) inch size.

Finish plate shall weigh not less than one hundred and thirteen (113) pounds net per box of one hundred and twelve (112) sheets, including at least ten (10) pounds of coating. Black plate shall be of best quality basic open heart (s) [h] soft steel or charcoal iron, weighing from one hundred and three (103) to one hundred and five (105) pounds per box of one hundred and twelve (112) sheets before coating.

Coating shall be an alloy of not less than twenty-five (25) per cent. of pure new tin, nor more than seventy-five (75) per cent. of pure new lead, applied by the pure palm oil process, no acid flux or flux of any kind other than palm oil shall be used: Plates shall be resquared.

All joints shall have a lock seam which when finished will give a lap of not less than one-half (½) inch, joints shall be nailed under the seams except at cross seams in marginal covering of door where no nails are necessary.

Nails shall be placed in center of vertical joints, and as close as possible to the standing plates in the horizontal joints, without breaking through the metal when the plates are turned down over the nail heads.

The four corners shall be covered first.

For each corner of a door a whole sheet of tin shall be used without cutting, making a miter fold instead of a miter joint or seam, driving two nails under each fold.

Then the edge shall be covered with sheets of the same size (or long strips if preferred) and be locked into corner pieces with a one-half (½) inch lock seam joint.

Then the side sheets shall be applied, starting with the first sheet at the right hand lower corner. Then all horizontal seams except at the top of the door shall be made by a single lock seam of four thicknesses of tin, the nails being driven through three thicknesses, the fourth thickness being bent, and turned down to cover the nail heads.

All vertical joints and joints at the top of the door shall be made by a double lock seam of six (6) thicknesses of tin, as follows: First form a standing lock seam not less than one (1) inch high, then flatten down and nail through the four thicknesses, then bend back over and cover the nails and flatten to place leaving a lock seam not less than one-half (½) inch wide.

One side of the door shall be covered before beginning on the other.

Nails shall be number twelve and one-half

(12½) or thirteen (13) gauge, flat head, full barbed wire nails, two (2) inches long.

Five nails shall be used each side and four on each end of the sheet, nails being placed close to but not at the corners.

Care shall be taken to have sheets as flat against the door as possible in order to avoid air space.

When the covering is completed a round hole shall be cut through the middle plate on the exposed side of the door, but not through the wood core.

Hole shall be three (3) inches in diameter for doors under fifty (50) square feet in area and four (4) inches in diameter for doors in excess of fifty (50) square feet.

Tin shall be secured around this opening with small nails and the wood thus exposed shall be thoroughly painted.

Section 6. [Hardware and equipment for standard automatic fire doors.] (Horizontal Pattern.) A. SIZE AND SHAPE OF DOORS. Automatic doors shall overlap the sides and top of opening four (4) inches. Top of door shall conform to the incline of the rail, viz.: Three-quarters (¾) of an inch per foot.

B. TRACK. Shall be made of the best quality flat rolled steel three and one-half (3½) inches wide and three-eighths (⅜) inch thick, with rounded edges.

Length of track shall be equal to twice the width of the opening plus twenty-one (21) inches, twelve (12) inches of which shall be allowed for the lap and width of the door, eight (8) inches for attaching front and back bumpers and one (1) inch for clearance when the door is wide open.

Shall be so punched that a wall bolt will be located directly opposite each hanger when the door is closed and also for attaching front and back bumpers. Holes shall be thirteen-sixteenths (13-16) of an inch in diameter. Intermediate bolts shall be spaced not to exceed the distance between the door hangers.

Tracks shall have an incline of three-quarters (¾) of an inch per foot when mounted.

C. Mounting Track. The door shall be placed in proper position over opening with three-eighths (⅜) inch of blocking between sill and bottom, and one-quarter (¼) inch strip on upper edge of door. The track shall be placed in exact position over door and circles carefully marked on wall at holes for track bolts.

Holes shall be carefully drilled through the walls. Tracks shall be bolted in position first marked, placing a bracket at each bolt.

The front and back bumper shall also be installed when the track is bolted in position.

Door should be set so that side edges are plumb.

D. Attaching Hangers. Hangers shall be placed on track directly opposite wall bolts, and location of bolt holder shall be carefully marked on the door. Hangers shall be bolted to door, using one-half (½) inch special countersunk carriage bolts and placing heads of bolts on the *back of the door.*

Remove the blocking from under the door and from between the door and the track.

E. Attaching Binders. Two binders are required, the upper binder shall be placed about twenty-four (24) inches from the top of the door, and the lower binder about eighteen (18) inches above the sill. When the door is in contact with the front bumper, the binder shall be placed in contact with the edge of the door so that it will strike both binder and bumpers in closing.

Binders shall be made of three by one-quarter (3x¼) inch iron formed into the shape of a Z, with the wall leg not less than eight (8) inches long, the web of proper length to receive the door and the outer leg lapping the door not less than three (3) inches when closed.

F. Stay Rolls. Stay rolls shall be provided which will hold the door close to but not tightly against the wall.

Stay roll shall be of cast iron not less than three (3) inches in diameter and shall be bolted to a wrought iron bracket or arm made of three by one-quarter (3x¼) inch wrought iron roll shall be placed not less than nine (9) inches above the floor line, and the bracket or arm shall be bolted to the metal parts of the door sill or be bolted to and through the wall by five-eighths (⅝) inch bolts.

G. Chafing Strips. Each door shall be provided with two (2) three-quarter by one-quarter (¾x¼) half oval strips on the back of the door, and two (2) one by one-eighth (1x⅛) flat strips on the face of the door.

These strips shall be of iron or steel, fo
inches less in length than the width of th
and be bolted together through the door t
quarter (¼) inch bolts with countersunk
spaced nine (9) inches on centers and cl
the ends.

The above strips shall be placed horiz
and shall divide the door into three (3)
panels in height.

On the face of the door near the floo
shall be placed a one and one-half by one
(1½x⅛) inch iron or steel strip to take th
out of the stay roller. Length of these
shall be five (5) inches less than the wi
the door, and strips shall be bolted to th
by one-quarter (¼) inch bolts with count
heads, spaced nine (9) inches on cente
close to the ends.

Ends of oval strips shall be chamfered
not to catch on the brick work at the si
the opening.

The above strips shall be placed parall
the track above.

H. Wedge. Shall be placed on the
chafing strip back of the stay roll wh
door is closed and fastened in place by
screw one and one-quarter (1¼) and o
(2) inch screw. Wedge shall be five (5)
long, one and one-half (1½) inch face, an
from nothing to three-quarter (¾) inch in
ness.

I. Bumper Shoes. Four bumper shoe
be provided on each door, one opposit

bumper and one opposite each binder. These shall be made of one-quarter by three by nine (¼x3x9) inch iron or steel formed in the shape of a U and be secured to the door by four (4) one and one-quarter (1¼) inch screws.

J. HANGERS. Doors for openings six (6) feet wide and less shall have two (2) hangers and doors to openings more than six (6) feet wide shall have three (3) hangers.

Hangers shall be made of not less than one-quarter by four (¼x4) inch wrought iron, lapping over the door not less than twelve (12) inches, and shall extend above the pulley and turn down over the pulley in the shape of an inverted U to give support for the wheel axle.

Wheel shall be not less than five (5) inches in diameter, have grooved face to fit over the track and be provided with a one-half (½) inch in diameter steel axle.

Each hanger shall be secured to the door by three (3) one-half (½) inch through bolts with washers on the back of the door.

K. HANDLES. Flush pulls shall be placed on the back of the door, countersunk flush with the surface of the door.

Heavy bow-shaped handles shall be attached to the front of the door.

Handles shall be bolted together through the door, or be secured by through bolts with washers. Bolts shall be one-quarter (¼) inch.

L. BOLTS AND WASHERS. Bolts for track binders and stay roll shall be three-quarter (¾) inch diameter, extend through the wall and be provided with washers four (4) inches in diameter placed on the opposite side of the door.

M. OPERATION OF DOOR. The door shall hand and operate freely. If the wall is unusually rough and uneven the same shall be dressed off so as to remove all obstructions and prevent the destruction of the tin covering by chafing.

Doors shall be so hung as not to bind on the sill.

N. AUTOMATIC ATTACHMENTS. All sliding doors shall be counter-balanced by cords, pulleys and weights.

Cord shall be provided with a fusible link and be so run that the fusible link will be in front of and within six (6) inches of the top of the opening when the door is opened.

Fusible link shall fuse between one hundred and sixty (160) and one hundred and sixty-five (165) degrees Fahrenheit. Cord shall be hard plaited and not twisted. Pulley shall be of wrought or cast iron and shall be bolted to and through the wall by one-half (½) inch bolts with three (3) inch washers on the back of the wall.

O. DOOR POCKETS. Where materials of any nature are liable to be placed close to a sliding door and the same are liable to interfere with the free operation of the door, substantial enclosing pockets or frame work shall be provided.

P. PROTECTION OF COVERING. When the front edge of a door is liable to injury from trucks, etc., the same shall be protected by a continuous U shaped strip of one-eighth (⅛) inch iron or steel extending high enough to prevent injury to the door.

Strips shall lap the sides of the door six (6) inches, and shall be fastened on by one and one-quarter (1¼) inch screws spaced twelve (12) inches on centers and staggered.

Section 7. [Hardware and equipment for standard self-closing fire doors.] A. DOOR FRAME. Swinging fire doors shall shut into a brick rabbet in the wall, rabbet to be at least four (4) by four (4) inches and to have true sides and angles so that the door will close snugly into the same, or, door shall shut into a three by three by one-quarter (3x3x¼) inch angle iron rabbet set into and secured through the wall by one and one-quarter by one-quarter (1¼x¼) inch iron bars spaced not over two (2) feet on centers, or door may be used without a frame providing the door laps the wall not less than four (4) inches at the top and sides of the opening.

B. WALL EYES. Wall eyes to support hinges shall be made of wrought iron for three-quarter (¾) inch pin, built in wall; or, bolted through the wall with three-quarter (¾) inch bolts, with three-sixteenths (3-16) inch iron washer on each side of the wall. Bolts shall not be placed closer to the opening than four (4) inches.

C. HINGES. Hinges shall be of wrought iron or steel two and one-half by three-eighths (2½x⅜) inches, shall extend three-quarters (¾) of the way across the door and be bolted to the door by four (4) three-eighths (⅜) inch bolts

Doors more than seven (7) feet high or more than six (6) feet wide shall be provided with three hinges.

D. LATCHES. Doors shall be secured by at least three (3) latches made of one and one-half by three-eighths (1½x⅜) inch iron, worked together. The upper and lower latches shall be placed not more than twelve (12) inches from the top and bottom of the door.

Latches shall be operated from either side of the door, swing freely on three-eighths (⅜) inch bolts through the door, and be freely provided with the proper keepers bolted through the door and with a spring to insure latching.

E. CATCH. Catches shall be made of heavy wrought iron built in the wall and bolted through or bolted to the iron frame, and so designed as to permit the latches to freely enter.

F. ATTACHING HARDWARE. Hinges, latches, and keepers shall be secured to the door by machine or carriage bolts passing through the door. Heads of bolts shall rest against washers placed next to the tin, the nuts being placed against the steel members.

G. SELF CLOSING DOORS. Where self-closing doors are required the same shall be provided with pulley, cords and weights of proper size to close and latch the door to place.

Pulleys shall be of cast iron and be bolted to and through the walls by one-half (½) inch bolts.

Cord shall be of metal and be fastened to the door by eye bolts.

Section 8. [Hardware and equipment for standard hinged fire doors used in pairs or double.] Doors shall be constructed, covered and equipped the same as previously prescribed for standard self-closing fire door with the following exceptions, viz.:

The contiguous edges shall be slightly beveled to allow doors to be readily opened and closed.

One door shall be bolted at the top and bottom by seven-eights (⅞) inch steel double extension bolts held securely in place by three-eighths (⅜) inch bolts through the door. Both door bolts shall enter substantial metal strikers securely fastened into the arch and sill. Bolts shall be operated by a knob, lever, push bar, push plate, push handle or other device whereby the simple act of turning a knob or lever or pushing against a bar, plate or handle will release the top and bottom bolts at the same time. No independent top and bottom bolts shall be used on these doors.

Doors shall be secured by three latches of two by three-eighths (2x⅜) inch steel, working together. Upper and lower latches shall be placed not more than twelve (12) inches from the top and bottom of the door. Latches shall enter catches made of two by three-eighths (2x⅜) inch steel. Each catch shall be flared slightly to permit free entrance of bar and to be fastened by two three-eighths (⅜) inch bolts through the door.

The joint or opening between the edges of the door shall be covered by a strip of three by one-eighth (3x⅛) inch metal bolted to and through one door by one-quarter (¼) inch bolts spaced not over eight (8) inches on centers.

Double or pair of doors of this style or design shall not be used where self closing doors are required, but in place of the same, a sufficient number of single doors with masonry piers between shall be used.

Section 9. [Standard fire doors for elevators.] Doors to passenger elevators shall be constructed and equipped the same as previously prescribed for standard automatic fire doors, except: the track may be placed level; no automatic attachment will be necessary, the door shall be provided with a heavy wrought iron weighted or spring latch bolted to and through the door by one-quarter (¼) inch bolts, and catch shall be made of heavy wrought iron and be bolted to or through the wall by one-quarter (¼) inch bolts.

Openings to freight elevators shall be covered by standard automatic fire doors and where impossible to use such doors, standard automatic rolling steel doors shall be provided.

Section 10. [Standard automatic fire doors.] (Vertical Pattern). Where it is impossible to install hinged, self closing or automatic (horizontal pattern) standard fire doors, and when the openings covered by such doors are not used as a means of egress, automatic vertical doors may be used.

The construction of the door proper shall be the same as other standard fire doors.

Doors shall overlap the sides and top of the openings four (4) inches and slide vertically in steel tracks of a length equal to double the height of the door. Tracks shall be made of three and one-half by one-quarter (3½x¼) inch Z bars and a five by one-half (5x½) inch plate, the plate being placed flat against the wall and the Z bar placed on top of the same forming a track between the plate and the outer flange of the Z bar.

Track shall be bolted to and through the wall by three-quarter (¾) inch bolts extending through the wall and be provided with washers four (4) inches in diameter on the opposite side of the wall. Bolts shall be placed within six (6) inches of the top and bottom of the track and between these points be spaced not more than two (2) feet on centers.

The edges of the door working in the tracks, shall be covered with U shaped iron or steel plate extending the full height of the door on both edges. Strip shall be made of one-eighth (⅛) inch, metal lapping the door on both sides not less than three (3) inches and held to place by one and one-quarter (1¼) inch countersunk screws spaced not more than six (6) inches on centers.

At the top and center of the door there shall be placed a wrought iron plate, three by nine by one-quarter (3x9x¼) inches for securing the cable.

This shall be provided with an opening near the top one (1) inch in diameter, and plate shall be bolted to and through the door by three

(3) one-half (½) inch bolts with two (2) inch washers.

The cord shall connect with an eye bolt placed close to the bottom and at the center of the door.

A cord shall connect with a fusible link placed at the bottom of the door, pass to the left over two (2) pulleys placed near the ceiling and support the smaller weight. Cord shall be provided with a fusible link at the bottom of the door and also one near the ceiling when the door is open. The heavier weight shall be permanently connected by a wire (plaited) cable to the plate at the top of the door, pass to the right over two pulleys, and be so adjusted as to prevent the sudden dropping of the door, but allowing it to close when the link fuses. Link shall fuse between one hundred and sixty (160) and one hundred and sixty-five (165) degrees, Fahr.

Section 11. [Painting.] Standard fire doors shall not be painted unless it is necessary and not until they have first been given a coat of mineral brown, venetian red or red oxide paint ground in pure linseed oil.

Section 12. [Care and maintenance.] Fire doors shall be ready for instant use at all times, and the surroundings be kept clear of everything that would be likely to obstruct or interfere with their operation.

Fire doors shall be kept closed at night, on Sundays and holidays, and whenever the openings are not in use:

No tin shall be tacked on standard fire doors, and when tin becomes worn new sheets shall be substituted and such sheets applied the same as when covering a new door.

The following notice shall be posted on each opening protected by the above mentioned standard fire doors (except self closing doors): "KEEP THIS FIRE DOOR SHUT."

Section 13. [Special standard fire doors.] In the finished parts of the building where standard fire doors are required; and where such doors are used to enclose elevators and stairways, or to subdivide a building of one kind of occupancy into smaller floor area; special standard fire doors constructed and equipped as follows may be used in place of standard fire doors previously prescribed.

In the finished parts of buildings where double fire doors are required or where doors are placed on both sides of the walls, a standard automatic fire door or a standard rolling steel shutter shall be used on one side of the wall, and a special standard fire door may be used on the other side in place of standard fire doors previously prescribed.

A. SIZE OF DOOR. No single door shall be used in openings more than four (4) feet wide and no pair of double doors shall be used in openings more than six (6) feet wide. No door shall be more than eight (8) feet high.

If doors are not hung to frames, the door shall lap the opening at the top and sides not less than four (4) inches.

Door frames shall have rabbets not less than one-half (½) inch deep by the thickness of the door.

B. Sills and Lintels. Sills under [and] lintels over doors shall be the same as previously required for standard fire doors.

C. Thickness of Doors. Where two sets of doors are used at the same opening and on opposite sides of the wall, a standard automatic fire door or a standard rolling steel shutter shall be placed on one side of the wall, and a special standard fire door may be placed on other side instead of the standard fire doors previously prescribed. Special standard fire doors so used shall be not less than two and one-half (2½) inches thick through the stiles and rails, and not less than one (1) inch thick at the panels or thinnest part of the door.

Special standard fire doors used to enclose elevators and stairways, or to subdivide a building of one kind of occupancy into smaller floor areas, shall be not less than one and five-eighths (1⅝) inches thick through the stiles and rails, and not less than five sixteenths (5-16) inches thick at the panels or thinnest part of the door.

D. Wood Core. If a wood core is used the kind and quality of the lumber shall be the same as prescribed for standard fire doors.

E. Metal Covering. Doors shall be completely covered including the edges with sheet iron or steel of not thinner than number twenty (20) U. S. gauge.

Sheets forming stiles or rails shall be made in one length.

Doors shall be assembled by using lock seams, by welding the seams or joints, or by through bolts; and all joints and connections shall be made absolutely air tight without the use of solder.

No nails shall be used in assembling these doors, and screws may be used only when the heads of the same are not exposed to view, or are not liable to be drawn or loosened in case of direct fire.

F. Door Stiffening. Core of doors may be made of wood, with stiles, rails and panels of wood filling out tightly to the asbestos lining; or the doors shall be made hollow and be reinforced with metal strips, angles or channels, so placed and secured as to make the door absolutely stiff and rigid.

G. Asbestos Lining. The steel or iron covering forming panels, rails, stiles and edges of doors shall be lined with asbestos paper or asbestos board.

H. Wire Glass. Wire glass may be used in doors to stairways and elevator enclosures providing the area of the glass shall not exceed seven hundred and twenty (720) square inches.

Glass to same shall be the same as prescribed for standard fire windows.

I. Door Frame. Door frames shall be made of iron or steel. If the frame is reinforced by wood, the metal shall be not thinner than number twenty (20) U. S. gauges; and, if not reinforced with wood, the metal shall be not thinner than number eighteen (18) U. S. gauge.

Wood frames shall be covered on all four faces with iron or steel as above mentioned, on with a lock seam.

Frame shall be doweled to the fireproof p tition by a one-eighth by three (⅛x3) inch st of metal, placed on the back of the frame bolted to or locked into the metal frame co ing. Frames not reinforced by wood, shall provided with flanges that will dowel into fireproof partition not less than two (2) inc or be bolted to and through the partition by c half (½) inch bolts spaced not more than (2) feet on centers.

Frames not reinforced with wood shall filled with brick or Portland cement concrete.

J. Hardware. No hinged or swinging d shall have less than three butts or hinges.

All hardware except escutcheons and l plates shall be secured by bolts.

Where hardware is secured directly to the i or steel plates, reinforcing plates of metal steel shall be used.

All doors shall be provided with locks latches.

Self-closing doors shall be provided with ch and springs or metal chains and weights of s cient strength or weight to close and latch door to place.

Title 4.

STANDARD SHAFT AND BELT OPEN INGS.

Section 1. [Standard shaft openings.] Wh *shafts* pass through fire walls, through walls t as a fire stop, or through walls mentioned under the various titles of part 2, as "fireproof walls," a hanger shall be placed on one side of the wall and the opening around the shaft bricked up as closely as possible without touching the shaft. The remaining space around the shaft shall be made practically tight by cement and the shaft turned before the cement has fully set.

Section 2. [Standard belt openings.] Where belts pass through standard fire walls, through walls used as fire stops, or through walls, ceilings or floors mentioned under the various titles of part 2 as "fireproof walls, ceilings and floors," the openings shall be covered by double standard fire doors.

Doors shall be made of two (2) thicknesses of thirteen-sixteenths (13-16) inch boards otherwise to be constructed as prescribed for standard fire doors.

Doors shall be provided with two (2) suitable hooks to hold the same closed.

Doors shall slide in an upper and lower guard rail made of Z bars of one-quarter (¼) inch metal and of proper size to receive the doors. Rails shall be bolted to and through the wall by three-quarter (¾) inch bolts, spaced not more than two (2) feet on centers and close to the end of the rail, and fasten to four (4) [inch] washers placed on the other side of the wall.

Rails shall be of proper length to retain the door when open.

By double doors is meant two doors sliding in the same rails and coming together at the center *of the opening.*

The above doors shall be slotted to receive the belting.

Where impossible to install double doors as above mentioned, metal hoods may be used. Hoods shall be of such a design, shape and size as to cover and enclose the pulley and shaft, and leave no open space for the communication of fire. Hoods shall be made of not less than number twenty (20) B. & S. gauge galvanized iron, put together with rivets, (without the use of solder) and be flanged at the wall, floor or ceiling two (2) inches and be riveted to a two by two by one-quarter (2x2x¼) inch angle iron frame. Angle iron frame shall be bolted to and through the wall, floor or ceiling by one-half (½) inch bolts spaced not more than one (1) foot on centers, and fastened to three (3) inch washers on the other side of the wall, floor or ceiling.

Title 5.

STANDARD ROLLING STEEL DOORS AND SHUTTERS.

Section 1. [Opening in wall.] The opening shall be constructed the same as previously mentioned for standard fire doors, except sills used under windows.

Window sills shall be made of not less than the following, viz.: five by eight (5 x 8) inch stone, five by eight (5 x 8) inch concrete, three by eight (3 x 8) inch terra cotta, one-half by eight (½ x 8) *inch* cast iron or one-quarter by eight (¼ x 8) inch steel plate riveted to a two by two by one-quarter (2 x 2 x ¼) inch angle placed on the face of the wall forming an apron. These sills shall extend into the masonry not less than four (4) inches on both sides of the opening, project at least two (2) inches beyond the face of the wall and extend not less than one (1) inch under the window frame.

Section 2. [Door or shutter.] Door or shutter shall be made of galvanized steel of not less than number twenty-four (24) U. S. gauge.

The door or shutter shall be so retained in the grooves that the opening to be protected will be completely covered, and the coil shall be placed well above the opening.

Door or shutter shall be provided with wearing strips at the edges, and extend into the grooves at the sides at least one and one-half (1½) inches. Where the door or shutter is wide it shall lap the grooves in excess of this.

The upper edge shall be reinforced by one or two one by one-eighth (1 x ⅛) inch strips securely riveted on each side.

Curtain shall be securely fastened to the spring barrels or rollers by machine screws or bolts.

Bottom of door or shutter shall be reinforced by not less than a one and one-quarter by one and one-quarter by one-quarter (1¼x1¼x¼) inch angle iron securely riveted on. One web of the angle shall extend into the groove at each side. Doors and shutters more than five (5) feet wide shall have placed at the bottom of the same and in addition to the angle iron a metal strip not less than three by one-eighth (3 x $\frac{1}{8}$) inch.

Door or shutter shall be equipped with a spring balance or be so designed that it will uncoil of its own weight when subjected to heat. Door or shutter shall be provided with a device which will support the door or shutter in a closed position independent of the spring balance, and be provided with fusible links or other device which will fuse the link or operate the other device at a temperature of from one hundred and sixty (160) to one hundred and sixty-five (165) degrees Fahrenheit.

Section 3. [Brackets.] Brackets shall be of wrought iron or steel securely bolted to the wall.

Section 4. [Lugs.] Lugs supporting the shafting shall be of steel and be securely bolted or riveted to the brackets.

Lugs shall present a broad bearing for the shaft or bearing pins with ample allowance for a reasonable amount of expansion in or sagging of the shaft.

Section 5. [Shaft or roller.] Shaft or roller shall be of steel of sufficient strength when heated to carry the weight of the curtain without excessive sagging.

Shaft or bearing pins shall be of steel retained in the rollers and brackets in a substantial and secure manner. Spring barrels may be of cast iron.

Section 6. [Grooves.] Grooves shall be made of steel of not less than three-sixteenths *(3-16)* inch in thickness, and in one U shaped piece. Grooves shall be securely riveted or bolted to a suitable angle iron for attaching to the wall. Where grooves for large openings are spliced the joint shall be covered by a steel splice plate, formed into a U shape, be placed on the outside of the track and be riveted to the ends of the tracks assembled.

Grooves shall be securely but loosely bolted to the masonry by through bolts, or expansion bolts carefully installed, or to structural iron at the wall opening. Wall bolts shall be spaced not more than eighteen (18) inches on centers. The grooves shall also be securely bolted to the brackets unless the upper wall bolts are close to them.

Where possible the grooves shall be so installed that they will be protected by the brick work or other fireproof material. The holes in the wall angles shall be not less than twice the diameter of the wall bolts and be covered by washers under the heads of the bolts.

Grooves shall be at least one-half (½) inch deeper than the amount the curtain enters the groove so as to allow for expansion.

Section 7. [Hood.] Hood shall be made of not less than number twenty-four (24) U. S. gauge galvanized iron, and be so constructed that it cannot be easily bent or damaged to such extent that it will interfere with the operations of the curtain.

Hood shall be securely fastened to the wall at the top and to the brackets at each end.

If hoods are placed on the outside of the build-

Section [illegible]

square inches nor be more than forty-eight (48) inches long.

The glass shall be of such dimensions, after selvage is removed, that the bearing in the groove or rabbet will not exceed one-eighth (⅛) inch less than the full depth called for under grooves and rabbets.

The glass shall be retained by the structural parts of the frame or sash independently of the material which may be used for weather proofing purposes. Only non-inflammable materials shall be used in setting glass in the sash.

C. SETTING. Frames shall be provided with extending wings or flanges, of not less than one (1) inch in width, placed on the sides of the frames so as to hold them securely in the wall; or the frames shall be of such a form as to be securely retained in the wall without any additional fastenings.

The brick work or other fireproof material shall be built up tightly around the frame so as to make as tight a joint as possible.

D. MATERIAL. The material for the sash and frame shall be not less than number twenty-four (24) B. & S. gauge galvanized iron, and of a quality soft enough to permit all necessary bending without breakage.

The galvanized iron shall not flake or break badly in bending.

The several parts of the sash and frame shall be constructed in one piece where practicable, and be so formed as to afford ample weather proof qualities.

Sash and frames may be made of not than twenty (20) ounce copper in localities ject to unusual corrosive atmospheric influe and where galvanized iron will rust rapidly, viding the exposure is not extreme.

Copper sash and frames shall not be use elevator shafts, interior partitions or where l to be subject[ed] to intense internal fires.

E. Joints. Joint shall be made with i locking seams or riveted so as to be in all ticulars substantial and durable, and so a afford ample fire resisting qualities. Where sible joints shall be formed so that the will be towards the heat exposure.

Solder may be used only for the purpos filling the joints, protecting the iron from and for finishing, but shall not be usec fastening essential parts.

F. Grooves and Rabbets. Grooves and bets shall be not less than three-quarters of an inch in depth and so that the actual l ing of the glass will not be less than five-eig (⅝) of an inch at all points.

Grooves shall be so constructed that they not spread apart and release the glass when jected to heat and the force of an ordinary stream from either side of the window.

G. Reglazing. The sash or frame shal so constructed that the window can be regl without reconstructing the sash or frame.

H. Air Space in Frame. Free commu tion shall be provided between the air spac the various parts of the frame.

I. Head and Sill of Frame. Head anc

shall be made in one piece where practicable and be securely riveted or fastened to the jambs by double seaming or by some other method affording suitable fire resisting and weather proof qualities.

The head shall be closed at the top and the piece forming this closure shall be securely fastened to each side at all points.

The sill shall be filled with concrete or other non-inflammable material throughly reinforcing the same in a substantial manner.

Such reinforcement shall not interfere with the operation of the window nor detract from its fire resisting qualities.

J. MUNTINS. Muntins shall be wide enough to provide for the grooves or rabbets previously described, and permit of the installation of the proper glass sizes.

Muntins shall be so designed and constructed that they will not warp or bulge materially under heat or rapid cooling, and where necessary the same shall be reinforced by structural iron or steel placed inside the muntins.

Muntins shall be securely fastened to the sash or frame, and cross muntins shall be securely fastened to the vertical muntins.

K. SASH. Stiles and rails of sash shall have a thickness and width of not less than one and three-quarters (1¾) inches and be securely fastened together at each corner.

These dimensions may be reduced to one and one-half (1½) inches where these members are reinforced by structural iron or steel.

Stiles and rails shall be so designed and constructed as to provide the necessary rigidity and so that they will not warp materially under heat, or when subject[ed] to rapid cooling by the application of water.

Grooves and rabbets shall be constructed as previously mentioned.

Sash shall be made so as to correspond with the frame at the points of contact or fit into the frame with suitable stops and parting beads of metal.

Wearing surfaces shall be as few as is consistent with strength and fire resisting qualities and be reinforced where practicable.

Sash shall afford ample weather proof qualities, and flat surfaces that retain water shall be avoided.

L. LIFTING OR SLIDING SASH. Lifting or sliding sash shall be counter weighed so as to balance.

The sash weights shall be properly separated by parting strips in the boxes containing them, and be accessible through the jambs of the frame.

Sash shall be provided with metal sash cord and smooth running sash pulleys securely riveted or bolted in place. The sash cord shall be of sufficient strength to withstand severe heat without parting and be thoroughly protected against moisture and corrosion.

Sash shall be fitted into the frame with suitable stops and parting beads of metal. Sash shall be removable.

The meeting rails of the sash shall be so constructed as to prevent the passage of heat and flame. Each opening shall be equipped with one or more iron sash locks securely riveted or bolted in place at the factory.

M. HORIZONTAL PIVOTED SASH. Sash shall be pivoted above the center on steel pivots at least three-eighths (⅜) inch in diameter. Pivots shall work in brass eye plates securely riveted to place. Frames shall be reinforced where the pivots enter, by riveting on one-eighth (⅛) inch iron strips so drilled as to receive the pivots.

Sash shall be provided with suitable stops and an effective attachment for holding each open or closed.

Sash shall be provided with a substantial gravity lock or latch, at top and bottom, which will be positive in action.

Where the lower sash is stationary, or where two pivoted sash are used the transom bar or meeting rails dividing the upper and lower sash shall be so constructed that it will not warp or bulge materially under heat, or rapid cooling.

Meeting rails or transom bars, shall be made so as [not] to be easily affected by rust, and so as to afford ample weather proof qualities.

N. VERTICAL PIVOTED SASH. Sash pivoted vertically shall comply with all the requirements for horizontal pivoted sash.

If the entire window is pivoted in one sash, the same shall be so constructed as to afford stiffness and in such a manner as to prevent warping under heat.

O. HINGED SASH OR CASEMENT WINDOWS. Hinged sash or casement windows shall be provided with heavy hinges and a substantial brass lock securely bolted or riveted to place.

Sash shall be so constructed as to fit the frame closely and afford ample weather proof qualities at all points.

Sash shall be provided with all stops and fastenings necessary to prevent warping under heat.

P. Double Glazed Sash. Double glazed shall be constructed essentially with the requirements for single glazed sash, and be used when the contents of the building are inflammable and the exposure severe. The application of the rule to be at the discretion of the chief inspector of workshops, factories and public buildings, or the building inspector or commissioner in cities having building inspection departments.

The air space between the two thicknesses of glass shall be not less than one (1) inch and be provided with suitable ventilation at the top and bottom.

Where two or more sash are used, one above the other, the air space between the sheets of glass shall be arranged to be connected when the window is closed.

In case of severe exposure from the outside, no inflammable material shall be placed nearer any double glazed window than three (3) feet, nor nearer any single glazed window than four (4) feet. To avoid any possibility of storing inflammable materials closer to the windows than the above dimensions, gas pipe guard rails shall be used.

Q. MULLIONED WINDOWS. Where openings are in excess of five by nine (5x9) feet, the metal frame containing the sash or glass shall be reinforced at every point of division by I beams thoroughly protected by fireproofing.

I beams shall be securely fastened into the masonry walls or be bolted to the structural frame of the building with proper allowance for the expansion of the beams when heated.

The depth of the I beam shall be not less than five (5) inches and shall be increased where the length of the beam exceeds nine (9) feet.

The beams shall be covered with not less than two (2) inches of tile, concrete or other fireproof material on the flanges and not less than two and one-half (2½) inches next to the web.

The metal frame shall be securely attached to the reinforced members.

R. AUTOMATIC ATTACHMENT. All lifting, pivoted, hinged, casement or movable sash shall be so arranged as to automatically close and lock under fire by the fusing of a link or other means to accomplish the same results.

The fusible device shall be placed on the outside of the window when it is open and placed in a position to receive the direct heat from exposing fires. The attachments for opening or holding the sash open shall not interfere with the action of the automatic device or prevent the sash from closing.

The above fusible links or automatic device shall operate under a temperature of from one hundred and sixty (160) to one hundred and sixty-five (165) degrees Fahr.

S. PAINTING. Frames and sash shall be thoroughly painted inside and out to prevent rusting.

Section 3. [Standard fireproof windows.] (With Wrought Iron Frames). A. SIZE OF GLASS. The unsupported surface of glass shall not exceed forty-eight (48) inches in either dimension nor seven hundred and twenty (720) square inches.

The glass shall be of such dimensions after selvage is removed, that the bearing in the groove or rabbet will not exceed one-eighth (⅛) inch less than the full depth called for, for grooves and rabbets. (See section 2, Grooves and Rabbets.)

The glass shall be retained by the structural part of the frame or sash independently of the material which may be used for weather proof purposes.

Only non-inflammable material shall be used in setting glass in the sash.

B. FRAMES. Frames shall be made of three and one-half by three-eighths (3½ x ⅜) inch flat iron welded so as to be continuous or fasten at the corner with suitable angles securely riveted on the outside of the frame.

Frames shall be set next to the masonry and be anchored to the wall by two by one-half (2x ½) inch anchor irons securely riveted to the frame and bent so as to enter the wall.

C. SASH. Sash shall be made of one and one-eighth by one and one-half by one-quarter (1⅛ x 1½ x ¼) inch angle iron.

The rails and stiles shall be welded together at the corners so as to be continuous.

D. MUNTINS. Muntins shall be made of one and three-quarters by one and one-half by one-quarter (1¾x1½x¼) inch iron welded to each other at each intersection, and also to the stiles and rails so as to form the proper rabbets for the glass.

E. INSIDE ANGLES. Inside angles holding the glass in the frame shall be of one by one by one-eighth (1x1x⅛) inch angle iron fastened with bolts so that they can be removed for reglazing.

F. FASTENINGS. Sash shall be provided with suitable attachments for holding it open or closed.

G. STOPS. Stops shall be made of one by one by one-eighth (1x1x⅛) inch angle iron riveted on each side of the frame.

H. PIVOTS. Pivots shall be one-half (½) inch if at top and bottom and three-quarter (¾) inch if at sides. Pivots shall be securely fastened to three-eighths (⅜) inch plates riveted to the sash.

The holes in the frame for the pivots shall be of easy fit. Thin bearing strips shall be placed on the frame at the pivots so as to allow clearance and the free movement of the sash.

I. STATIONARY WINDOWS. Where permanent windows are desired the frame may be dispensed with, and the sash installed in the opening next to the masonry or fireproof walls and the sash shall securely anchor to the wall.

J. AUTOMATIC ATTACHMENT. All movable sash shall *be provided* with an automatic attachment which will close and securely lock the sash in case of fire. (See section 2, Automatic Attachment.)

K. DIMENSIONS OF IRON. The foregoing dimensions of iron represent the minimum requirements and are allowable for glass one-quarter (¼) inch thick. If thicker glass is used the dimensions of the iron shall be uniformly increased.

L. PAINTING. All iron work shall be thoroughly painted with two coats of iron oxide and boiled oil.

Section 4. [Standard fireproof windows.] (For prism glass.) A. FRAMING. Window frame and sash containing prism glass frame shall fulfill all the requirements for standard fireproof windows with hollow metallic or wrought iron frames for wired glass.

B. SIZE. The dimensions of the unsupported electro-glazed panel shall not exceed fifty (50) inches in either direction.

C. BORDERS. The metal border at the edges of the electro-glazed panel shall be of rolled copper or brass tubing at least one-half (½) inch wide by three-eighths (⅜) inch in thickness.

The corners shall be securely fastened together by substantial knees of the same metal inserted in the tubing.

D. GLASS. Polished plate or prism glass units not exceeding four (4) inches in either direction and of not less than three-sixteenths (3-16) inch in thickness may be used.

E. RIBBONS. The ribbons or metal muntins between the glass units shall be of unbroken strips of rolled copper one-eighth (⅛) inch in thickness and nine thirty-seconds (9-32) of an inch in width, interlocked at each intersection. All ends shall pass entirely through the borders and be clinched on the outer edge.

F. Electrolytic Deposit. All joints at the corner of the border, at the fastenings of the ribbons to the border and at the intersections of the ribbons shall be securely fixed by a sufficient electrolytic deposit of copper to form a rigid framing and to retain the units of glass securely in place.

G. Glazing. The border shall be retained in a rabbet or groove in the sash at least one-half (½) inch in depth. In windows having width of over twenty-four (24) inches the border shall be bolted to the upper rail of the sash.

Title 7.

STANDARD FIRE LADDERS AND FIRE ESCAPES.

Section 1. [General notes.] Below and under their respective headings will be found the specifications for the different kinds of fire ladders and fire escapes to be placed on, or used in connection with the various kinds of buildings.

For the style of ladder or escape to be used see means of egress under the various titles of part 2.

Inclosed fireproof stairways may be used in *place of fire escapes.* (See section 1, title 9.)

These specifications together with the detail (typical) working drawings prepared by the chief inspector of workshops, factories and public buildings shall be followed in every particular; except in special cases where changes may be necessary in order to meet different or exceptional conditions, and then changes may be made only when the detail drawings and specifications for the proposed ladders or escapes have been approved in writing by the chief inspector of workshops, factories and public buildings or building inspector or commissioner in cities having building inspection departments.

Section 2. [Ladders and escapes for frame buildings.] "B" standard fire escapes shall not be supported by or be placed on the walls of a building of frame construction.

Number one and two ladders and A, C and D escapes may be placed on or be used in connection with buildings of either frame or masonry construction.

Section 3. [Location.] Fire ladders and fire escapes shall be so located as to lead directly to streets or alleys, or to grade line courts or areas leading directly to public highways; and, in no case shall a fire escape be placed in an inner court.

Section 4. [Encroachments.] For buildings hereinafter erected no fire ladder or fire escape shall be placed on or above any public street, alley or thoroughfare, nor in any way extend beyond the lot line of the property on, or for which the same is erected.

Where necessary the walls of the building shall be set back from the lot line, or recesses provided of ample width or size to receive such ladders and escapes.

Section 5. [Fire shields.] Where "B" standard fire escapes pass over other openings there shall be a fire shield made of one-quarter (¼) inch steel plate suspended over the opening and immediately below the fire escape.

This shall extend one (1) foot beyond the jambs of the lower opening on each side, and from the wall to a point one (1) foot beyond the outside stringer of the escape.

This hood shall be in the form of a segment with not less than a six (6) inch rise, and the spring lines of the segment shall be placed at right angles to the walls of the building.

Section 6. [Openings leading to fire escape and ladders.] Unless otherwise provided for under the various titles of part 2, under the sections referring to means of egress, windows may be used as a means of egress to standard fire ladders and to "A" standard fire escapes, and doors shall be used as a means of egress to B, C and D standard fire escapes.

Door and window sills leading to fire escapes shall be placed not more than seven (7) inches above the landing, balcony or bridge.

No grills, bars or other obstructions shall be placed over any window or door leading to a fire escape or fire ladder.

Exit windows shall have the lower sash hinge to swing out or hung to raise; sash shall be not less than two (2) feet six (6) inches wide, not less than three (3) feet high and not more than two (2) feet above the floor line. Hinged sash shall be provided with a one knob latch or lever bolt and sliding sash with two bar sash lifts and a sash lock. Exit doors shall be not less than three (3) feet wide nor less than six feet four inches (6′ 4″) high unless otherwise prescribed, level with the floor of the building, swing outward, and be so hung as not to interfere with the use of, or obstruct the fire escapes.

Door shall be equipped with one knob latches or other locking device as provided for under the various titles of part 2 referring to exit door hardware.

Section 7. [Fire escapes for hospitals.] Fire escapes used in connection with hospitals shall be provided with landings or balconies of such dimensions as to permit of the easy handling of a cot at the various turns or landings.

Section 8. [Incumbrances.] All fire escapes shall be kept free from incumbrances or obstructions at all times, and all courts and passage ways leading from fire escapes or fire ladders to public highways shall not be used for storage or any other purpose whatsoever except means of egress.

Section 9. [Maintenance.] The owner of the building shall keep all ladders and escapes in good repair, free from scales, and properly painted.

Section 10. [No. [one] (1) standard fire

ladders.] A number one standard fire ladder is one foot nine inches (1′ 9″) wide over all, is supported from the walls of the building, starts five feet three inches (5′ 3″) above the sill of the highest door or window, or balcony leading thereto and runs to within seven feet nine inches (7′ 9″) of the grade line.

Ladders of this design may be used either on frame or masonry walls.

A. FRAME USED ON MASONRY WALLS. The frame shall be made of two (2) two by two by one-quarter (2x2x¼) inch angle irons with the webs parallel to the six (6) inches away from the wall of the building; and, with the flanges turned toward and at right angles to the wall and placed one foot nine inches (1′ 9″) on centers.

This frame shall start seven feet nine inches (7′ 9″) above the grade line, run to a point five feet three inches (5′ 3″) above the highest door or window sill or balcony leading thereto, and then be bent or extended into the wall of the building not less than eight (8) inches.

At the top of the ladder and fastened to each angle by two (2) one-half (½) inch rivets there shall be one-half (½) inch bolts extending through and bolted to four by four (4x4) inch washers placed on the inside of the wall.

Washer and nut shall be let into the brick work so as to give a smooth surface when plastered over.

Below this point the frame shall be supported by and anchored to the walls of the building by one-half (½) inch bolts spaced not more than six (6) feet on centers and placed on both angles of the frame. These bolts shall be flattened and be riveted to the web of the angles by half inch rivets, and the heads shall extend into the brick work not less than four (4) inches and be solidly anchored to place by lead calking. The lowermost support shall not be more than eight (8) inches above the bottom of the frame or angles.

The ladder shall be placed not more than six (6) inches away from any door, window or balcony leading thereto.

B. Frame Used on Frame Walls. The frame shall be made of two (2) two by two by one-quarter (2x2x¼) inch angle irons, with the webs parallel to and six (6) inches away from the wall of the building, and with the flanges turned toward and at right angles to the wall and placed one foot nine inches (1′ 9″) on center.

This frame shall start seven feet nine inches (7′ 9″) above the grade line, run to a point five feet three inches (5′ 3″) above the highest door or window sill or balcony leading thereto, and then be bent, turned against the wall of the building and be riveted to a wall angle by one-half (½) inch rivets.

Below this point the frame shall be supported by and be anchored to the walls of the building, by one by one-quarter (1x¼) inch iron anchors spaced not more than six (6) feet on centers and placed on both angles of the frame. The anchors shall be riveted to the frame by one-half (½) inch rivets, and be bent at the wall and be riveted to wall angles by one-half (½) inch rivets.

Wall angles to support the above frame shall be one and one-half by one and one-half by one-quarter (1½x1½x¼) [inch] of proper length to cover two studding, but in no case less than two (2) feet long. These angles shall be bolted to the studding by one-half (½) inch bolts.

The heads of all bolts through the studding shall be counter sunk into the studding so as to give a smooth surface when plastered over.

C. RUNGS. Rungs shall be made of three-quarter (¾) inch in diameter iron bars.

The lowermost rung shall be placed not more than eight (8) feet above the grade line; the uppermost rung not less than five (5) feet above the topmost door or window sill, or balcony leading to the ladder, and between these points the rungs shall be spaced not more than one foot two inches (1′ 2″) on centers.

Rungs shall be flattened at the ends, let into and through the web of the angles, and be welded securely to place.

D. MISCELLANEOUS. Everything shall be made in a thorough and workmanlike manner in accordance with the above specifications all to be given two (2) coats of the best weather paint, one (1) before being erected and one (1) after, and the whole shall be constructed subject to the approval of the chief inspector of workshops, factories and public buildings, or building inspector or commissioner in cities having building inspection departments.

Section 11. [No. [two] (2) standard fire ladders.] A number two standard fire ladder is one foot nine inches (1′ 9″) wide over all; is supported from the walls of the building; starts one foot three inches (1′ 3″) above the floor level of an areaway placed below the grade line and runs to a point six feet three inches (6′ 3″) above the grade line.

A. AREAWAY. Areaway shall be of such a shape and size as to receive the exit door or window leading thereto without interfering with the operation of such door or window, shall be not less than three (3) feet wide and not less than three (3) feet long and provide a blank wall space not less than two feet nine inches (2′ 9″) wide for the placing of the ladder; and the floor of area shall be not less than six (6) inches below the top of the door or window sill leading thereto.

Ladders of this design may be used either on frame or masonry walls.

B. FRAME. The frame shall be made of two, two by two by one-quarter (2x2x¼) inch angle irons; with the webs parallel to and six (6) inches away from the walls of the building; and with the flanges turned toward and at right angles to the wall and placed one foot nine inches (1′ 9″) on centers.

The frame shall start one foot three inches (1′ 3″) above the floor line of the area, run to a point six feet three inches (6′ 3″) above the grade line, and then be bent and be extended into the wall of the building not less than eight (8) inches.

At the top of the ladder and fastened to each angle by two (2) one-half (½) inch rivets there shall be one-half (½) inch bolts extending through the wall and bolted to four by four (4x4) inch washers placed in the inside of the wall.

Washer and nut shall be let into the brick work so as to give a smooth surface when plastered over.

Below this point the frame shall be supported by and be anchored to the walls of the building by one-half (½) inch bolts spaced not more than six (6) feet on centers and placed on both angles of the frame. These bolts shall be flattened and be riveted to the web of the angles by half (½) inch rivets, and the heads shall extend into the brick work not less than four (4) inches, and be solidly anchored to place by lead calking. The lowermost support shall not be more than eight (8) inches above the bottom of the frame or angles.

The frame shall not be placed nearer any wall, window or door opening than six (6) inches.

If ladders of this style are supported by frame walls the supports shall be as called for under specifications for No. [one] (1) standard ladders.

C. Rungs. Rungs shall be made of three-quarters (¾) inch in diameter iron bars.

The lowermost rung shall be placed not more than one foot six inches (1′ 6″) above the floor of the areaway, the uppermost rung not less than six feet (6′ 0″) above the grade line and between these points the rungs shall be spaced not more than one foot two inches (1′ 2″) on centers.

Rungs shall be flattened at the ends, let into and through the web of the angles and be welded securely to place.

D. GUARDING AREAWAYS. The areaways to be provided with a guard railing two feet six inches (2′ 6″) high, made of two inch (2″) iron pipe, put together with standard connections and provided with wall flanges. Standards shall be spaced not more than four (4) feet on centers, and be let into the coping of the areaway not less than four (4) inches and be leaded to place.

Railing shall be provided with top and center horizontal bars.

Railing shall extend around all open sides of the areaway and have no openings through the same.

Areaways may be partly covered at the grade line providing an opening two feet six inches (2′ 6″) square is left at the ladder for means of egress and such opening is provided with a guard rail as above described.

E. MISCELLANEOUS. Everything shall be made in a thorough and workmanlike manner in accordance with the above specifications, all metal work to be given two (2) coats of the best weather paint one (1) before erected and one (1) after, and the whole shall be constructed subject to the approval of the chief inspector of workshops, factories and public buildings, or building inspector or commissioner in cities having building inspection departments.

Section 12. ["A" standard fire escapes.] An "A" standard fire escape is twenty-four (24) inches wide, is supported by brackets from the wall of the building and extends to within ten (10) feet of the grade line, from which point a counterbalanced stairway, or a stationary ladder placed against the wall of the buildings leads to the grade line.

Fire escapes of this design may be used on either frame or masonry walls.

A. BALCONY. There shall be a balcony at each floor above the ground twenty-one (21) inches wide clear of all obstructions, except at head and foot of stairs where the balcony shall be forty-five (45) inches wide for a length of not less than thirty (30) inches, the wide section of balcony to be supported by two (2) brackets; balconies shall be of sufficient length to extend not less than twelve (12) inches beyond window openings.

Balcony floor shall be constructed with three (3) one and one-half by one-fourth (1½x¼) inch angle iron stringers resting on brackets to be placed not to exceed eight (8) feet apart; there shall be one and one-fourth by one-fourth (1¼x ¼) inch flat iron strips riveted to one and one-half by one-fourth (1½x¼) inch angle iron floor stringers, strips shall be placed not to exceed three-quarters (¾) of an inch apart which will form the floor.

Balconies at window levels shall not be placed more than seven (7) inches below the top of the window sills.

B. Lattice Truss for Balcony. There shall be a lattice work truss on all wide and narrow balconies constructed with a bottom stringer of one and one-half by one-fourth (1½x¼) inch angle iron, the lattice pieces shall be one and one-fourth by one fourth (1¼x¼) inch flat iron which shall be riveted to the outside stringer of landing or balcony, and lattice truss shall be dropped down twelve (12) inches below landing or balcony to make same rigid.

C. Hand Rail for Balcony. The top or hand rail for each landing or balcony shall be three (3) feet high from balcony floor stringer, made of one and one-fourth by three-sixteenths (1¼x 3-16) inch angle iron, the end next to the wall shall have a one-half (½) inch bolt securely fastened to top rail, which shall pass through the wall and fasten on the inside with a four (4) inch washer and a one-half (½) inch nut, both to be let into the wall so as to form a smooth surface when plastered over.

The filling in between hand rail and stringer of the balcony shall be made of one and one-fourth by one fourth (1¼x¼) inch flat iron using two (2) bars between the top or hand rail and the floor stringer.

The top or hand rail of balcony shall be braced with a five-eighths (⅝) inch round iron brace rod securely riveted to the top or hand rail, then passing down through the outer end of the main bracket and fastened with nut both on upper and lower sides.

D. Bracket Used on Masonry Walls. The main or top cord of bracket shall be made from two by one-half (2x½) inch flat iron, extending out eight (8) inches beyond the balcony; with a seven-eighths (⅞) inch bolt, welded on the back end, which shall pass through the wall and fasten on the inside with a six (6) inch washer and a seven-eighths (⅞) inch nut, washer and nut shall be let into the wall so as to form a smooth surface when plastered over; main cord of bracket shall be braced with a brace made from one and one-half by one-half (1½x½) inch flat iron into the main angle brace, which is made of one and one-half by one-fourth (1½x¼) inch angle iron and shall extend to the outer side of the balcony; brackets for twenty-one (21) inch wide balcony will not require filling. Brackets shall be anchored through the solid wall and not placed under windows or doors, and be placed not to exceed eight (8) feet apart.

E. Brackets and Anchors Used on Frame Walls. The main or top cord of brackets shall be made from two by one-half (2x½) inch flat iron, extending out eight (8) inches beyond the balcony with a seven-eighths (⅞) inch bolt welded on the back ends, which will pass through the wall and fasten to a two and one-half by three-eighths (2½x⅜) inch wall angle with a two inch washer and a seven-eighths (⅞) inch nut; washer, nut and angle shall be let into the wall so as to form a smooth surface when plastered over; main cord of bracket shall be braced with a brace made from one and one-half by one-half (1½x½) *inch flat iron into* the main angle brace which is made of one and one-half by one-fourth (1½x¼) inch angle iron and shall extend to the outer side of the balcony; the lower part of the bracket shall rest on and be bolted to a two and one-half by three-eighths (2½x⅜) inch wall angle by one-half (½) inch bolt; brackets for twenty-one (21) inch wide balcony will not require filling.

Brackets shall be anchored through the solid wall and not be placed under doors or windows, nor be placed to exceed eight (8) feet on centers measuring horizontally.

Hand rails shall be secured to the walls of frame buildings the same as to masonry walls except where bolts do not strike the studding; short pieces of two (2) by four (4) inch timbers shall be placed between the studding at the proper height to secure the bolts, and nuts and washers shall be countersunk so as to give a smooth surface when plastered over.

Wall angles shall be placed horizontally, be of such a length, as to give a bearing of not less than two (2) inches on two studding and be bolted to the studding at both ends by one-half (½) inch bolts; the upper wall angle shall be placed on the inside of the wall and the flange of the angle cut off so as to fit between the studding; and the lower wall angle shall be placed on the outside of the wall with the flange below the bolts forming a shelf to support the bracket.

F. STAIRWAY. There shall be a flight of stairs from each balcony, and from first balcony above the ground there shall be a flight of stairs to extend to within ten (10) feet of the ground.

The stairs shall be constructed with two (2) stringers, each made with a top and bottom cord of one and one-fourth by three-sixteenths (1¼x 3-16) inch angle iron, with a rise rail of one and one-fourth by one-fourth (1¼x¼) inch flat iron and a tread rail of one and one-fourth by three-sixteenths (1¼x3-16) inch angle iron, formed into a lattice of sufficient width to give an eight (8) inch tread and an eight (8) inch rise step so that the outer edge of the step will be the center of the lattice, the lattice work shall be riveted at the center, and the one and one-fourth by three-sixteenths (1¼x3-16) inch angle tread rail shall form the support for the steps.

The steps shall be formed of one and one-fourth by three-sixteenths (1¼x3-16) inch angle iron, with four (4) angles to each tread, and the web of these angles shall be cut out so as to give the flanges a solid bearing on the stringers.

The stairs in no case shall be less than twenty-four (24) inches wide from outside to outside of stringers, and shall be placed on the outside of the balcony.

The stairs shall have a one-half (½) inch round iron anchor rod riveted to the top cord of the inside stair stringer about central between balconies, which shall anchor in the wall to prevent vibration.

The last flight of stairs from first balcony above the ground shall come down to within ten

(10) feet of the ground, there to have a landing not less than two (2) feet (long), which shall rest on a bracket as per above bracket specifications, or hung on stirrups from balcony stringers above. At the lower or first balcony above the ground there shall be provided a counterbalanced stairway, provided with a counterbalanced extension to the stringers of proper weights to hold the stairway normally in horizontal position.

The weight of the counterbalance shall be equally balanced by a superimposed load of one hundred and twenty-five (125) pounds placed four (4) feet from the fulcrum.

The stairway shall be constructed as prescribed under "F" and "G," have hand rails on both sides and be of proper length to reach ground or grade line with the treads level and the risers plumb.

The fulcrum or hinge shall be made of one-half by twelve by twelve (½x12x12) inch plate (two to each hinge or fulcrum) which shall b riveted to the top and bottom stringers of t stairway, and balcony truss by one-half (½) in rivets, using four (4) rivets to each plate.

The pivot shall be made of a bar one and o quarter (1¼) inches in diameter, which shall p through both hinges and project two (2) inc on either side of the stair stringers, and bar shall be locked to place by metal pins by upset ends.

The weight shall be supported by two, o half by three (½x3) inch bars riveted to stair stringer.

The weight shall be cylindrical in form, of a length equal to the width of the stairs and be held to place by one and one-quarter (1¼) inch bar passing through the weight and the two, one-half by three (½x3) inch supports. Bar shall be held to place by metal pins or upset ends.

Where impossible to install a counterbalanced stairway, and when the change is authorized by the chief inspector of workshops, factories and public buildings or by the building inspector or commissioner in cities having building inspection departments, ladders may be used in place of the counterbalanced stairways above prescribed.

Ladder shall be constructed according to the No. [one] (1) standard fire ladder requirements, except that the frame shall start not more than one foot six inches (1′ 6″) above the grade line and the lowermost rung not more than (2) feet above the grade line.

G. Hand Rails and Balusters for Stairs. The stairs shall be provided with a hand rail on each side constructed of one and one-fourth by three-sixteenths (1¼x3-16) inch angle iron, and each alternate one and one-fourth by one-fourth (1¼x¼) inch flat iron rise rail shall run through and rivet to hand rail forming the balusters for stairs; the filling in between hand rails and stairs shall be one (1) strip of one and one-fourth by one-fourth (1¼x¼) inch flat iron.

The hand rails for the stairs shall be braced central between the balconies with a bracket made out of one and one-fourth by one-fourth

(1¼x¼) inch flat iron riveted to top and bott cord of stair stringers, with a one-half (½) i round brace rod from hand rail to bracket.

The balusters for the stairs shall be three feet high from the nosing of the tread, and through and fasten on the bottom cord of stair stringer.

H. RIVETS. The entire work shall be ass bled by soft iron rivets except where above tinctly mentioned to be bolted together. B used in assembling shall be one-half (½) i and all bolts shall be riveted over after b drawn to place.

Rivets shall be used at all points where or more members lap or come in contact each other.

Rivets for brackets shall be three-quarters inch.

Rivets for brace rods shall be one-half inch.

Rivets for stringers, truss and hand rails s be three-eighths (⅜) inch.

Rivets for stair treads and balcony floor st shall be one-quarter (¼) inch.

I. MISCELLANEOUS. Everything shall be n in a thorough and workmanlike manner in cordance with the above specifications, all tc given two (2) coats of the best weather p: one (1) before being erected and one (1) a and the whole shall be constructed subject the approval of the chief inspector of shops, tories and public buildings, or building inspector or commissioner in cities having building inspection departments.

"A" standard fire escapes when used above and as a part of a fire escape built according to other standard specifications, shall not have a counterbalanced stairway or ladder to the lower balcony, but the stairway shall be continued down to and be connected with the topmost balcony of the other standard escape.

Section 13. ["B" standard fire escapes.] A "B" standard fire escape is three feet six inches (3′ 6″) wide, is supported on brackets from the walls of the building, and the stairway runs to the grade level.

Fire escapes of this design shall not be supported by frame walls.

A. LANDING OR BALCONY. Landings or balconies three (3) feet eight (8) inches wide in the clear, measuring from the wall line to the inside of lattice truss, shall be placed at each floor level; and shall be of sufficient length to extend twelve (12) inches beyond the jambs of the exit door or window, and permit brackets and hand rails to be anchored through the solid wall. Intermediate landings or balconies three feet six inches by three feet six inches (3′ 6″ x 3′ 6″) shall be inserted between story levels, so located as not to permit of over eighteen (18) or less than three (3) risers in any run of steps.

The floor of landing or balcony shall be constructed of one and one-fourth by one-fourth (1¼x¼) inch flat iron placed one (1) inch apart and riveted to five (5) one and one-half by one-fourth (1½x¼) inch angle iron stringers, and the stringers shall rest on brackets.

Brackets shall be spaced not over five (5) feet on centers and at both ends of each landing or balcony.

Landings or balconies at floor levels shall be placed not more than seven (7) inches below the top of the door sill.

B. LATTICE TRUSS FOR BALCONY. There shall be a lattice work truss with a bottom stringer of one and one-quarter by three-sixteenths (1¼x3-16) inch angle iron, the lattice pieces to be one and one-quarter by one quarter (1¼x¼) inch flat iron which shall be riveted to the outside stringer of landing or balcony, and lattice truss shall be dropped down twelve (12) inches below the landing or balcony floor to make same rigid

C. HAND RAIL FOR LANDING OR BALCONY There shall be a top or hand rail for landings or balconies, which shall be three (3) feet high from the balcony floor, made of one and one fourth by three-sixteenths (1¼x3-16) angle iron This shall be cut, mitered and bent at the wall line, run down the wall and be cut, bent and bolted to the balcony floor.

Top of wall angle shall be bolted to and through the wall to a four (4) inch washer, by a half (½) inch bolt with a half (½) inch nut and both to be let into the wall so as to form a smooth surface when plastered over.

The filling in between hand rail and platform shall be made of one and one-fourth by one fourth (1¼x¼) inch flat iron using two (2) bars between top or hand rail and floor stringers, and verticals spaced one (1) foot eight (8) inches on centers.

The top or hand rail of landing or balcony shall be braced with five-eighths (⅝) inch round iron brace rods securely riveted to top or hand rail, then passing down through the outer end of the top cord of main brackets, and fastened with nut both on upper and lower side of bracket.

D. BRACKETS FOR LANDING OR BALCONY AT FLOOR LEVELS. The top of brackets shall be made from two by one-half (2x½) inch flat iron extending over eight (8) inches beyond the outer edge of the landing or balcony and turned down at inner edge to rivet to vertical wall piece. Vertical wall piece shall be made of two and one-half by three-eighths (2½x⅜) inch angles three (3) feet three (3) inches long, extending not over twelve (12) inches above the top of the top cord and three (3) inches below the bottom of angle brace.

The diagonal brace for bracket shall be made of one and one-half by one-quarter (1½x¼) angle iron, this shall start at outer edge of landing or balcony, run at an angle of thirty (30) degrees and be riveted to the vertical wall piece.

Brace between top and bottom cords of brackets shall be made of two by one-half (2x½) inch brace rod, made in one piece and bent to shape. This shall start at center of top cord, drop perpendicular [ly] to angle brace and then run at an angle to angle formed by top cord and wall piece.

The top of the bracket shall be bolted to and through the wall by a seven-eighths (⅞) inch bolt with a six (6) inch washer and a seven eighths (⅞) inch nut, washer and nut to be le into the wall so as to form a smooth surfac when plastered over. Bottom of bracket shal be secured to the wall by a one-half (½) inch pin extending into the wall four (4) inches.

E. BRACKETS FOR LANDINGS OR BALCONIES No AT FLOOR LEVELS AND FOR STAIRWAYS. Thes shall be of the same style and design as bracket for landings or balconies at the floor lines, except, wall piece shall stop at the top cord of th bracket and the top anchor bolt shall be placed immediately under the top cord.

F. STAIRWAYS. **The outside and inside stringers of the stairs shall be constructed with top and bottom cords of one and one-quarter by three-sixteenths (1¼x3-16) inch angle iron, riveted together, formed into a lattice with one and one-fourth by one-quarter (1¼x¼) flat iron ris rail, and a one and one-fourth by three-sixteenth (1¼x3-16) inch angle iron tread rail, which shal form the supports for the treads.**

The center stringer shall be made of one and one-quarter by three-sixteenths (1¼x3-16) inch raking stringer, with one and one-quarter by three-sixteenths (1¼x3-16) angle iron formed into a ten (10) inch tread, and a one and one-quarte by one-quarter (1¼x¼) flat iron formed into a seven (7) inch riser.

Treads shall be made of one and one-quarte by three-sixteenths (1¼x3-16) angle iron, with *five* (5) angles to each tread.

Stairways shall be three feet eight inches (3′ 8″) wide in the clear between the wall line of the building and the center of the outside stringer, and steps shall be formed into a seven (7) inch rise and a ten (10) inch tread. Center of wall stringer shall be placed two and one-half (2½) inches away from wall of building.

Where angles forming treads rest on center and two outside stringers, the vertical member or web shall be cut out so that the flange will rest solidly upon the stringers.

Stairs shall be supported upon brackets constructed as per bracket specifications, and bracket shall be spaced not over eight (8) feet on centers, measuring horizontally.

There shall be seven-eighths (⅞) inch round iron brace, riveted central between the brackets to the bottom cord of outside stringer, and anchored to the wall at an angle of forty-five (45) degrees to the wall and ninety (90) degrees to the stringer.

The weight of the stairs shall be thrown perpendicularly on to the main brackets by small brackets bent to the proper form, made of two by one-half (2x½) inch flat bars ten (10) inches long and riveted at both ends to the bottom of each stringer.

There shall be a five-eighths (⅝) inch round iron brace rod from the top cord of each bracket, securely riveted to the top rail, then passing down through the outer end of the top cord of main bracket and fastened with a nut on the upper and lower side of the top cord of the bracket.

G. Hand Rails and Balusters for St The stairways shall be provided with hand on the outer and inner sides and made of and one-fourth by three-sixteenths (1¼x3 inch angle iron, hand rails to be bent and tu down to form the first baluster and be anch to the footing stone; the hand rail on the i side anchoring to the wall; the filling in bet the hand rails and stringers shall be made of and one-fourth by one-fourth (1¼x¼) inch iron using one bar between hand rail stringer, and verticals spaced one (1) foot (8) inches on centers.

Hand rail shall be three (3) feet high m uring perpendicular[ly] from the nosing of step.

H. Rivets. The entire work shall be as bled by soft iron rivets except where above tinctly mentioned to be bolted together and w stairs fasten at top and bottom to balconies [or] landings. Bolts used in assembling sha one-half (½) inch, and all bolts shall be riv over after being drawn to place.

Rivets shall be used at all points where or more members lap or come in contact each other.

Rivets for brackets shall be three-quarter inch.

Rivets for brace rods shall be one-half inch.

Rivets for stringers, truss and hand rails be three-eighths (⅜) inch.

Rivets for stair treads and balcony floor strips shall be one-quarter (¼) inch.

I. FOUNDATION. Foot of stairway shall rest upon a concrete foundation wall, not less than twelve (12) inches wide, three (3) feet ten (10) inches long and extending below the surface of the ground not less than two (2) feet six (6) inches.

Concrete shall be composed of one part fresh Portland cement, two parts clean sharp sand and four parts clean gravel or crushed stone.

Foundation shall be formed in a wooden form.

J. MISCELLANEOUS. Everything shall be done in a thorough and workmanlike manner, in accordance with the above specifications including all minor details and connections necessary to make the same rigid, substantial and complete.

All shall be given two coats of the best weather paint, one coat before and the other after assembling.

The whole of the above work shall be constructed subject to the approval of the chief inspector of workshops, factories and public buildings, or building inspector or commissioner in cities having building inspection departments.

Section 14. ["C" standard fire escapes.] A "C" standard fire escape is three feet six inches (3′ 6″) wide, is supported by columns, is built either at right angles to the wall of the building, or is placed two feet six inches (2′ 6″) away from and parallel to the walls of the building, and the stairway runs to the grade line.

Fire escapes of this design may be placed on buildings with either frame or masonry walls.

A. Landing or Balcony. Landings or
conies six (6) feet wide, measuring from
wall line to the outside of the platform, shal
placed at each floor level where the fire esc
is run parallel to the building, and landings
balconies three feet six inches (3′ 6″) w
measuring from the wall line to the outside
the platform, shall be placed at the floor l
where the fire escape runs at right angles
the building, and these landings or balconies s
be of sufficient length to extend twelve (
inches beyond the jambs of the exit door l
ing thereto, and permit the channel iron supp
and hand rails to be anchored through the s
wall. Intermediate landings or balconies t
feet six inches by three feet six inches (3′ 6
3′ 6″) shall be inserted between story levels
located as not to permit of over eighteen (
or less than three (3) risers in any run of st

The floor of landing or balcony shall be
structed of one and one-fourth by one-fo
(1¼x¼) inch flat iron, placed one (1) inch a
and riveted to one and one-half by one-fo
(1½x¼) inch angle stringers placed not over
(1) foot three (3) inches on centers. The
tical member or web of stringers shall be
out over supports so that the flange will
solidly upon the supports.

Landings or balconies shall be supported u
channel iron supports, using not less than
(5) inch channels to support floor stringers,
not less than three (3) inch channels at
outer ends of balconies or landings and par
with the floor stringers.

Floor stringers shall be supported every five (5) feet by channel irons. Where necessary to use balconies or landings over five (5) feet by six (6) feet, the channel iron supports for the same shall be calculated to safely support a load of one hundred (100) pounds per square foot.

Transverse channels for balconies or landings shall be let into the brick walls not less than eight (8) inches, and be bolted to and through the wall by one-half (½) inch bolt with a four (4) inch washer and one-half (½) inch nut, washer and nut shall be let into the wall so as to form a smooth surface when plastered over.

Transverse channels shall extend eight (8) inches beyond the outer edge of the landing or balcony to support brace rod to balcony railing.

Landings or balconies at floor levels shall be placed not more than seven (7) inches below the top of the door sill.

B. HAND RAIL FOR LANDING OR BALCONY. There shall be a top or hand rail for landings or balconies, which shall be three (3) feet high from balcony floor, made of one and one-fourth by three-sixteenths (1¼x3-16) angle iron. This shall be cut, mitered and bent at the wall line, run down the wall and be cut, bent and bolted to the balcony floor.

Top of wall angle shall be bolted to and through the wall to four (4) inch washer by one-half (½) inch bolt with a half (½) inch nut, both to be let into the wall so as to form a smooth surface when plastered over.

The *filling in between* hand rail and platform shall be made of one and one-fourth by one-fourth (1¼x¼) inch flat iron, using two (2) bars between top or hand rail and floor stringers, and verticals spaced one (1) foot eight (8) inches on centers.

The top or hand rail of landing or balcony shall be braced with five-eighths (⅝) inch round iron brace rods, securely riveted to top or hand rail, then passing down through the outer end of the transverse channels and fastened with nut both on upper and lower sides of channel irons.

C. Supports for Stairways. Stairways shall be supported every eight (8) feet by three by three-eighths (3x⅜ inch angle irons, let into the brick work at least eight (8) inches, and projecting eight (8) inches beyond the outer edge of stairway to give support for hand rail brace.

Angle iron support shall be bolted to and through the wall, by a one-half (½) inch bolt with a four (4) inch washer and a one-half (½) inch nut, washer and nut to be let into the wall so as to form a smooth surface when plastered over.

D. Stairways. The outside and inside stringers of the stairs shall be constructed with top and bottom cords of one and one-quarter by three-sixteenths (1¼x3-16) inch angle iron, riveted together, formed into a lattice with one and one-quarter by one-quarter (1¼x¼) flat iron rise rail, and a one and one-fourth by three-sixteenths (1¼x3-16) inch angle iron tread rail which shall form the support for the treads.

The center stringer shall be made of one and one-quarter by three-sixteenths (1¼x3-16) inch raking stringer, with one and one-quarter by three-sixteenths (1¼x3-16) angle iron formed into a ten (10) inch tread, and a one and one-quarter by one-quarter (1¼x¼) inch flat iron formed into a seven (7) inch riser.

Treads shall be made of one and one-quarter by three-sixteenths (1¼x3-16) inch angle iron, with five angles to each tread.

Stairway shall be three (3) feet four (4) inches wide measuring from center to center of outside stringers, and steps shall be formed into a seven (7) inch rise and a ten (10) inch tread. Center of wall stringer shall be two feet six inches (2′ 6″) away from the wall line.

Where angles forming treads rest on center and two outside stringers, the vertical member or web shall be cut out so that the flange will rest solidly upon the stringers.

The weight of the stairs shall be thrown perpendicularly onto the angle iron support by small brackets bent to the proper form, made of two by one-half (2x½) inch flat bars ten (10) inches long and riveted at both ends to the bottom of each stringer.

There shall be five-eighths (⅝) inch round iron brace rods on both sides of stairways, securely riveted to the top rail, then passing down through the angle iron support and fastened with a nut on the upper and lower side of the web of the angle iron support.

E. Hand Rails and Balusters for Stairs. The stairways shall be provided with hand rails on the outer and inner sides, made of one and one-fourth by three-sixteenths (1¼x3-16) inch angle iron, hand rails shall be bent and turned down to form the first balusters and be anchored to the footing stone; the filling in between the hand rails and stringers shall be made of one and one-fourth by one-fourth (1¼x¼) inch flat iron using one bar between hand rail and stringer, and verticals spaced one (1) foot eight (8) inches on centers.

Hand rail shall be three (3) feet high measuring perpendicular from the nosing of the step.

F. Supports for Balconies and Stairways. The entire escape, including balconies and stairways, shall be supported upon angle iron columns of the proper size as called for by the following schedule:

Columns (16) [15] feet and less 2½x2½x⅜″ L.
Columns 15 feet to 20 feet 2½x3x⅜″ L.
Columns 20 feet to 25 feet 2½x3½x⅜″ L.
Columbus 25 to 30 feet two 2½x2½x⅜″ L.

Columns shall be placed at both outer corners of balconies at floor levels, at all four corners of intermediate balconies or landings, under both sides of stairways, and not over eight (8) feet on centers.

Bearing plate under foot of columns shall be made of eight by eight by one-half (8x8x½) inch plate secured to column by a three by three-eighths (3x⅜) inch angle.

Columns shall be tied together by three (3) inch channels in both directions, from column to column and from columns to the wall. The first channel shall be placed six (6) feet above the ground, and above the same channels shall be spaced not over ten (10) feet apart.

Channels entering the walls shall have not less than eight (8) inch bearing, and be anchored to and through the wall, by one-half (½) inch bolts with four (4) inch washers and one-half (½) inch nuts, washer and nut to be let into the wall so as to form a smooth surface when plastered over.

All angles formed between lower channels and columns, shall have knee braces made of one and one-half by three-eighths (1½x⅜) inch flat iron two feet six inches (2′ 6″) long, placed below the channel.

All panels above the lower channel shall be sway braced in both directions by diagonal rods dividing the frame into triangles, rods to be one-half (½) inch in diameter and have turn buckles.

Columns used to support fire escapes which parallel the walls of the building shall be set plumb, and columns used to support fire escapes which run at right angles to the building shall pitch outward toward the ground at a rate of two (2) inches per foot of height.

G. WALL ANGLES FOR FRAME BUILDINGS. Where "C" standard fire escapes are built in connection with frame buildings, angles and channels supporting balconies or landings shall not be let into the wall, but shall rest on and be bolted to, two and one-half by three-eighths (2½x⅜) inch wall angles by one-half (½) inch bolts.

Angles shall be of such length so as to give at least two (2) inches of bearing on two separate studding, and angles shall be bolted to the studding by half (½) inch bolts.

Hand rails shall be secured to the wall the same as for buildings of masonry construction, except where bolts do not strike the studding, short pieces of two by four (2x4) inch timber shall be set in between the studding at a proper height to secure the bolts.

Washers and nuts shall be countersunk into the studding so as to give a smooth surface when plastered over.

H. BOLTS. The following work shall be assembled by using one-half (½) inch bolts, viz.: channels to columns, knee braces, sway rods, channel iron supports for balconies and landings, angle iron supports for stairways, anchoring to walls and fastening stairways to the balconies.

Bolts used in assembling shall be riveted over after being drawn to place.

I. RIVETS. Rivets shall be used where two or more members lap or come in contact with each other (except where above specified to be bolted.

Rivets for small brackets shall be three-quarters (¾) inch.

Rivets for brace and anchor rods shall be one-half (½) inch.

Rivets for stringers and hand rails shall be three-eighths (⅜) inch.

Rivets for stair treads and balcony floor strips shall be one-quarter (¼) inch.

J. FOUNDATION. Foundation shall be made of concrete extending not less than two feet six inches (2' 6") below the finished grade line.

Foot of stairway shall rest on a foundation wall not less than twelve (12) inches wide and three (3) feet ten (10) inches long.

Columns shall rest on piers not less than eight (8) inches square, placed on footings not less than two (2) feet square and one (1) foot thick.

Concrete shall be composed of one part fresh Portland cement, two parts clean sharp sand and four parts clean gravel or crushed stone.

K. MISCELLANEOUS. Everything shall be done in a thorough and workmanlike manner, in accordance with the above specifications, including all minor details and connections necessary to make the same rigid, substantial and complete.

All shall be given two coats of the best weather paint, one coat before and the other after assembling.

The whole of the above work shall be constructed subject to the approval of the chief inspector of workshops, factories and public buildings, or building inspector or commissioner in cities having a building inspection department.

Section 15. ["D" standard fire escapes.] A "D" standard fire escape is three feet six inches (3′ 6″) wide; is supported by columns; is placed eight (8) feet away from the building and is connected to the building at each story by bridges; is built in the form of a tower containing two parallel flights of stairs, one leading downward from each story level to a platform or landing placed midway between the story levels, and the other flight of stairs running in the opposite direction and leading from the midway platform or landing to a balcony or landing placed at the next story level below; and the stairway runs to the grade line.

The main axis of the tower may be placed either at right angles to, or parallel with the walls of the building when the topmost bridge is not more than forty-eight (48) feet above the grade line; and where the top bridge is more than forty-eight (48) feet above the grade line, the tower shall parallel the walls of the building.

Fire escapes of this design may be placed on buildings with either frame or masonry walls.

A. BRIDGE AND LANDING, OR BALCONY. Bridge eight feet two inches (8′ 2″) wide, measuring from the wall line to the outside of the platform, shall be placed at each floor level and be of sufficient length to extend twelve (12) inches beyond the jambs of the exit opening leading thereto, and permit the latticed supports and hand rails to be anchored through the solid wall. Intermediate landings or balconies shall be placed midway between the story levels, so located as not to permit of over eighteeen (18) or less than three (3) risers in any run of steps; these landings or balconies shall be not less than three feet six inches (3′ 6″) wide, and be of a length equal to the total width of all stairways leading thereto or therefrom.

The floor of bridges, landing or balcony shall be constructed of one and one-fourth by one-*fourth* (1¼ x ¼) inch flat iron, placed one (1) inch apart and riveted to one and one-half by one-fourth (1½ x ¼) inch angle stringers placed not over one (1) foot three (3) inches on centers. The vertical member or web of stringers shall be cut out over supports so that the flange will rest solidly upon the supports.

Floor stringers shall be supported every five (5) feet by three (3) inch channels.

The ends of floor slats shall be riveted to a one and one-quarter by one-quarter (1¼ x ¼) inch flat iron filler.

Bridges and landings or balconies at floor levels shall be placed not more than seven (7) inches below the surface of the floor.

B. SUPPORTS FOR BRIDGES, LANDINGS OR BALCONIES. Bridges at the floor levels of the building shall be supported at the outer ends by lattice trusses. These trusses shall have a top and bottom stringer made of one and one-half by one-quarter (1½ x ¼) inch angles, the lattice pieces to be one and one-quarter by one-quarter (1¼ x ¼) inch flat iron, which shall be riveted to the outside stringer of landing or balcony, lattice truss shall be dropped down twelve (12) inches below the bridge floor to make the same rigid.

The lattice truss shall be secured to the columns supporting the tower by a one and one-half by one-quarter (1½ x ¼) inch angle one (1) foot long. This angle shall be riveted to the top and bottom members of the truss, and be bolted to the column by two (2) one-half (½) inch *bolts.*

The wall ends of the lattice trusses shall be let into the walls of the buildings not less than four (4) inches; the top and bottom angles of trusses shall be tied together by a two and one-half by three-eighths (2½ x ⅜) inch angle one (1) foot long and riveted to place; below the truss shall be placed a two by one-half by six (2 x ½ x 6) inch flat iron bent into the shape of an L; this shall be riveted to the lower angle of truss and be bolted to and through the wall by one-half (½) inch bolts and four (4) inch washers; washers and nut shall be let into the wall so as to give a smooth surface when plastered over.

The balconies or landings in the tower part of the escape shall be supported on all sides by channel irons of the following sizes—viz.:—supporting one side of a balcony and not more than eight (8) feet long, three (3) inch channel; supporting one side of a balcony and one or more stairways and not over eight (8) feet long, five (5) inch channels; placed on the long side of the tower running from corner to corner of tower, not over sixteen (16) feet long and supporting the ends of balconies, five (5) inch channel; supporting part of a balcony and part of a bridge and not over eight (8) feet long, five (5) inch channel.

When the above length of channels are exceeded the next larger channel shall be used.

All channels supporting balconies or landings, shall be supported at the ends by a channel of the same or greater dimensions, or be supported by an angle iron column running to the ground and resting on a masonry foundation.

Where one (1) channel is supported by another channel, standard connections shall be used, and these shall be riveted to one channel and be bolted to the other.

Channels supported by columns shall be bolted to the column by five-eighths (⅝) inch bolts, using one bolt for three (3) and four (4) inch channels, and two bolts for five (5) and six (6) inch channels.

C. HAND RAIL FOR BRIDGES AND BALCONIES OR LANDINGS. There shall be two hand rails for bridges, landings or balconies, one placed two feet six inches (2′ 6″) and the other four (4) feet above the bridge, balcony or landing floor made of one and one-fourth by three sixteenths (1¼x3-16) inch angle iron. The lower hand rail shall be cut, mitered and bent at the wall line, run down the wall and be cut, bent and bolted to the floor.

Top of wall angle shall be bolted to and through the wall, to four (4) inch washers by one-half (½) inch bolt with a half (½) inch nut, both to be let into the wall so as to form a smooth surface when plastered over.

The upper hand rail shall be placed two and one-quarter (2¼) inches beyond and outside of the lower hand rail, and be secured to the corner angle iron posts by one-half (½) inch bolts. At the outer corners of balconies and landings, the lower hand rail and the flat bars below the same shall be riveted to one and one-quarter by three-sixteenths (1¼ x 3-16) inch angle, running from the hand rail to the floor, at which point the angle shall be cut, bent and be bolted to the floor. One of the lower hand rails shall be carried across and be bolted to the angle posts by a one-half (½) inch bolt.

Where the level rail intersects with a raking rail, there shall be a one and one-quarter by three-sixtenths (1¼ x 3-16) inch angle running from the lower hand rail to the floor, riveted to the hand rail and flat bars, cut, bent and mitered at the bottom and bolted to the floor.

This angle shall be bolted to a similar angle fastened to the raking hand railing by two (2) one-half (½) inch bolts. The filling in between the lower hand-rail and the floor, shall be made of one and one-fourth by one-fourth (1¼ x ¼) inch flat iron, using three (3) bars between lower hand rail and the floor, and verticals spaced one foot eight inches (1′ 8″) on centers.

Upper hand rail shall be supported every one foot eight inches (1′ 8″) on centers, by one and one-fourth by one-fourth (1¼ x ¼) inch flat iron bars, riveted to the vertical bars below the lower hand rail, bent to clear the lower hand rail one and one-half (1½) inches and riveted to the upper hand rail.

Upper hand rail shall be bolted to and through the wall by one-half (½) inch bolts and two (2) inch washers, nuts and washers to be let into the brick work so as to give a smooth surface when plastered over.

Where lengths of railing exceed eight (8) feet between lateral supports the lower hand rail shall be braced with a five-eighths (⅝) inch round iron brace rod, securely riveted to the hand rail and fastened to a bracket or channel iron floor support eight (8) inches beyond the floor stringers, and secured to the bracket or channel with nuts on upper and lower side of the same.

Brackets shall be made of one and one-half by three-eighths (1½ x ⅜) inch flat bars.

D. SUPPORTS FOR STAIRWAYS. Stairways shall be supported by channels at each landing or balcony. The angle forming end of stair rail of each flight of stairs shall be run down to the bottom of the channel iron support and be bolted to the same by two (2) one-half (½) inch bolts. The center stringer shall be fastened to the channel supports by one and one-fourth by three-sixteenths (1¼ x 3-16) inch flat bars of proper length, riveted to the stringer by a one-half (½) inch rivet and bolted to the channel by a one-half (½) inch bolt.

When the outside hand rails continue beyond the lower riser on a straight line, the outer stringer shall rest on a one and one-fourth by three-sixteenths (1¼ x 3-16) inch angle riveted to the lower stringer and the vertical splicing angle and bolted to the floor by one (1) one-half (½) inch bolt.

E. STAIRWAYS. The outside and inside stringers of the stairs shall be constructed with top and bottom cords of one and one-quarter by three sixteenths (1¼ x 3-16) inch angle iron, riveted together, formed into a lattice with one and one-fourth by one-quarter (1¼ x ¼) flat iron rise rail, and a one and one-fourth by three-sixteenths (1¼ x 3-16) inch angle iron tread rail, which shall form the support for the treads.

The center stringer shall be made of one and one-quarter by three-sixteenths (1¼ x 3-16) inch raking stringer, with one and one-quarter by three-sixteenths (1¼ x 3-16) angle iron, formed into a ten (10) inch tread, and a one and one-quarter by one-quarter (1¼ x ¼) inch flat iron formed into a seven (7) inch riser.

Treads shall be made of one and one-quarter by three-sixteenths (1¼ x 3-16) angle iron with five angles to each tread.

Stairway shall be three (3) feet four (4) inches wide measuring from center to center of outside stringers and steps shall be formed into a seven (7) inch rise and a ten (10) inch tread.

Where angles forming treads rest on center and two outside stringers, the vertical member or web shall be cut out so that the flange will rest solidly upon the stringers.

In the center of the tower, there shall be a space or well between the outer stringers of both stairways not less than one and seven-eighths (1⅞) inches in the clear.

F. HAND RAILS AND BALUSTERS FOR STAIRS. Two hand rails shall be placed on both sides of all stairways, one placed two feet seven inches (2′ 7″) and the other three feet seven inches (3′ 7″) above the nosing of the steps measuring perpendicularly, made of one and one-fourth by three-sixteenths (1¼ x 3-16) angles.

At each end of each hand rail there shall be a vertical splicing angle, made of one and one-quarter by three-sixteenths (1¼ x 3-16) inch angle, which will run down to the support below and be secured to the outer railing by two (2) one-half (½) inch bolts.

The upper rail shall be placed two and one-quarter (2¼) inches beyond and outside of the lower hand rail.

The upper hand rail may be omitted below the lowest bridge and the other hand rail at the foot of the stairway shall be bent and turned down to form the first baluster and be bolted to the footing (stone).

The filling in between the lower hand rail and the stairs shall be made of one and one-fourth by one-fourth (1¼ x ¼) inch flat iron, using two bars between the lower hand rail and stringer, and verticals spaced one foot eight inches (1′ 8″) on centers.

Upper hand rail shall be supported every one foot eight inches (1′ 8″) on centers, by one and one-quarter by one-quarter (1¼ x ¼) inch flat bars, riveted to the vertical bars below the lower hand rail, bent to clear the lower hand rail one and one-half (1½) inches, and riveted to the upper hand rail.

Where length of railing exceeds eight (8) feet between lateral supports, the same shall be braced in a substantial and rigid manner by brace rods, bolts, brackets or other device best suited to the location.

G. SUPPORTS FOR TOWER. The tower shall be supported at each of the four corners by angle *iron columns* extending from the grade line to a point level with the topmost bridge, and of an undiminished size.

Columns to be of not less than the followin dimensions:

Columns 12′ 0″ and less 2″x2″x⅜″ L.

Column 12′ 0″ to 24′ 0″ long 3″x3″x⅜″ L.

Columns 24′ 0″ to (26′ 0″) [36′ 0″] long 4″x4″x ⅜″ L.

Columns 36′ 0″ to 48′ 0″ long 4″x4″x½″ L.

Columns 48′ 0″ to 60′ 0″ long 4″x4″x⅝″ L.

Columns 60′ 0″ to 72′ 0″ long ·4″x″x¾″[L.]

Columns over seventy-two (72) feet long shal be calculated to carry a uniform superimpose load of one hundred (100) pounds per squar foot on all stairways, bridges, balconies and landings, plus the dead weight of the escape.

When necessary to splice columns, not mor than two columns shall be spliced at the sam level and these colunms shall be diagonally opposite each other; columns shall have plane bearing surface, be provided with splice plate equal in area to the area of the column and be provided with a sufficient number of rivets to transfer the load from one column to the other.

No column length between lateral supports in any direction shall exceed fourteen (14) feet, and where such length is exceeded, channel iron placed horizontally and extending from column to column shall be used, such channel to be three (3) inches for a span of eight (8) feet or less, four (4) inches for a span from eight (8) feet to twelve (12) feet; five (5) inches, for a span *from* twelve (12) feet to sixteen (16) feet, six

(6) inches for a span from sixteen (16) feet to twenty (20) feet. Channels shall be bolted to the columns by five-eighths ($\frac{5}{8}$) inch bolts using one bolt at each end of three (3) and four (4) inch channels, and two (2) bolts for five (5) and six (6) inch channels.

A channel iron shall girth the tower not more than seven (7) feet above the grade line, and similar channels shall be placed at the top of the columns.

Where towers are placed at right angles to the building the outer end shall be sway braced, and where placed parallel with the walls of the building, both narrow ends shall be sway braced; sway bracing [of] topmost channels and columns shall be in the form of knee braces placed below the channels; these shall be made of one and one-half by three-eighths ($1\frac{1}{2} \times \frac{3}{8}$) inch flat iron three (3) feet long; and panels between these points shall be sway braced in both directions by diagonal rods dividing the frame into triangles, rods to be seven-eighths ($\frac{7}{8}$) inch in diameter, have turnbuckles and be secured to the column by seven-eighths ($\frac{7}{8}$) inch bolts.

Towers over forty-eight (48) feet high shall be placed parallel to the walls of the building and the columns opposite the bridge shall be braced from the walls of the building at each bridge level by a lattice truss designed and secured to the wall and column, the same as called for, for the bridge lattice truss.

Columns shall be secured to the bearing plates by three by three-eighths ($3 \times \frac{3}{8}$) inch angles riveted to the plate and bolted to the column. Plate

shall be anchored to the concrete founda
one-half (½) inch bolts one (1) foot long

H. BEARING PLATES, PIERS AND FO
The following sizes of bearing plates, f
tion piers and footings shall be used f
various sizes of columns employed:

Length and *Size of Columns.*	Size of Plate and Pier.	Size of Footing.
12′ 0″ long 2x2x$\frac{3}{8}$	6″x 6″	1′ 6″x1′ 6″
24′ 0″ long 3x3x($\frac{5}{8}$) [$\frac{3}{8}$″]	8″x 8″	2′ 0″x2′ 0″
36′ 0″ long 4x4x$\frac{3}{8}$	10″x 10″	2′ 6″x2′ 6″
48′ 0″ long 4x4x$\frac{1}{2}$	12″x 12″	3′ 0″x3′ 0″
60′ 0″ long 4x4x$\frac{5}{8}$	1′ 3″x1′ 3″	3′ 3″x3′ 3″
72′ 0″ long 4x4x$\frac{3}{4}$	1′ 6″x1′ 6″	3′ 6″x3′ 6″

Towers built in excess of seventy-two (72) feet in height shall be built according to special design and such designs and construction shall be approved by the chief inspector of work-shops, factories and public buildings, or building inspector or commissioner in cities having a building inspection department.

I. Wall Angles for Frame Buildings. Where D standard fire escapes are built in connection with frame buildings, the trusses supporting bridges shall not be let into the wall, but shall rest on and be bolted to, two and one-half by three-eighths (2½x⅜) inch wall angles by one-half (½) inch bolts.

Angles shall be of such length as to provide at least two (2) inches of bearing on two separate studding, and angles shall be bolted to the studding by half (½) inch bolts.

Hand rails shall be secured to the wall the same as for buildings of masonry construction, except where bolts do not strike studding, in which case short lengths of two (2) by four (4) inch timber shall be set in between the studding at a proper height to secure the bolts.

Washers and nuts shall be countersunk into the studding so as to give a smooth surface when plastered over.

J. Bolts. The following work shall be assembled by bolts, viz., seven-eighths (⅞) inch bolts shall be used to secure braces, five-eighths (⅝) inch bolts shall be used for securing channels to channels, and channels to columns, one-half (½) inch bolts shall be used to secure the following, knee braces, columns to plates, stairs to channels, splice angles to rails, stairs to floors, bridge truss to tower, bridge truss to wall, hand rail to wall and hand rails to columns.

Bolts used in assembly shall be riveted over after being drawn to place.

K. RIVETS. Rivets shall be used where two or more members lap or come in contact with each other (except where above mentioned to be bolted).

Rivets for stringers and hand rails shall be three-eighths (⅜) inch.

Rivets for stair threads and floor strips shall be one-quarter (¼) inch.

All other rivets shall be of a diameter equal to the thickness of the smaller members assembled.

L. FOUNDATION. Foundation shall be made of concrete extending not less than two feet six inches (2′ 6″) below the finished grade line.

Foot of stairs shall rest on a foundation not less than twelve (12) inches wide, nor less than three feet ten inches (3′ 10″) long.

Columns shall rest on piers not less than one foot six inches (1′ 6″) high, and piers shall rest on a footing not less than one (1) foot high. (For dimensions of footings and piers see H.)

Concrete shall be composed of one part fresh Portland cement, two parts clean sharp sand and four parts clean gravel or crushed stone, and be formed in a wooden or metal form.

M. MISCELLANEOUS. Everything shall be done in a thorough workmanlike manner, in accordance with *the above* specifications, including all minor details and connections necessary to make the same rigid, substantial and complete.

All shall be given two coats of the best weather paint, one coat before and the other after assembling.

The whole of the above work shall be constructed subject to the approval of the chief inspector of workshops, factories and public buildings, or building inspector or commissioner in cities having building inspection departments.

Title 8.

STANDARD FIREPROOF HEATER ROOM

Where fireproof apartments are required for the heating apparatus, the furnace or boiler, including the breeching, fuel room and firing space shall be enclosed by the brick walls not less than twelve (12) inches thick or by monolithic concrete walls not less than eight (8) inches thick; and the ceiling over the same shall not be less than the following, reinforced concrete slab four (4) inches thick, brick arches four (4) inches thick covered with one (1) inch of cement mortar and supported by fireproof steel with the necessary tie rods, or by hollow tile arches six (6) inches thick covered with two (2) inches of concrete, plastered on the under side and supported by fireproof steel with the necessary tie rods.

All openings into the above apartments shall be covered by standard self-closing fire doors.

Title 9.

STANDARD ENCLOSED FIREPROOF STAIRWAYS.

Section 1. [Where used.] Standard enclosed fireproof stairways shall be used as one means of egress from the second story of school buildings of A grade; may be used in place of fire escapes for theaters and in place of the ordinary service stairways and fire escapes for all other buildings.

Section 2. [General construction.] These stairways shall be enclosed by fireproof walls, ceilings and floors (see part 3, title 2) and the doors leading to the same need not be fireproof, all landings and platforms shall be of brick or hollow tile arches, stone or reinforced concrete; and all steps shall be of either reinforced concrete or of stone laid with an absolutely tight cement joint.

Stairways shall be provided with sufficient number of windows, transom or sash doors to properly light the same, and such windows, transoms or doors shall be placed in the external walls of the building.

Platforms, landings and treads shall be finished with a roughened face.

The same enclosure may be used for two or more stairways, providing there is no direct connection between any two stairways or stories, and such divisions are constructed of incombustible material.

Or the same stairway may be used for two *or more stories,* providing entrance to the same at each story or tier is gained by an exit door leading to an open balcony or platform placed beyond the wall of the building, from which platform or balcony an exit door shall lead directly to the enclosed fireproof stairway.

The traveling distance between the above doors shall be not less than five (5) feet.

The above platforms or balconies may be constructed according to either the B, C or D standard fire escape requirements or shall be built of fireproof materials and be enclosed by a substantial railing not less than three (3) feet high made of combustible material.

Section 3. [Detailed construction.] Stairways shall be of the width as required for exits; and be constructed and equipped the same as called for, for stairways under the various titles of part 2 unless otherwise above mentioned.

Section 4. [Grade line doors.] Exit doors shall be placed at the grade line platform, the width of which shall be equal to the greatest width of the stairway, and such doors shall open onto streets or alleys or to open courts leading to public highways.

Section 5. [Incumbrances.] Enclosed fireproof stairways shall be kept free from incumbrances or obstructions at all times, and all courts or passageways leading from the enclosed fireproof stairs to public highways shall not be used for storage or any other purpose whatsoever, except for means of egress or ingress.

Title 10.

STANDARD VENTILATING STOVES.

Section 1. [Stove.] A standard ventilating stove may be any style or design of heating stove, placed within the room to be warmed and ventilated, and shall be enclosed in a jacket made of galvanized or black iron. Jacket shall extend from the stove tray to a point four (4) inches above the top of the stove.

Section 2. [Fresh air supply.] Fresh air supply shall be taken from outside the building, be carried to the stove below the floor line either in vitrified sewer pipe, masonry ducts, or ducts made of wrought iron or steel of not less than three-sixteenths (3-16) inch in thickness, riveted together with tight joints.

Ducts shall be turned up and discharged under the center of the stove, from which point the air shall ascend between the radiating surface of the stove and jacket, and enter the room from the top of the stove.

Section 3. [Tray.] Stove shall be placed on a cast iron tray raised three (3) inches above the floor line, of the same size as the enclosing jacket, provided with an opening of proper size to receive the fresh air duct and projecting beyond the stove door one (1) foot in all directions. Stove door shall be provided with a metal collar extending from the face of the stove to the face of the jacket.

Section 4. [Smoke pipe.] No smoke pipe connection between the stove and the smoke flue shall be more than five (5) feet long, measuring horizontally.

Section 5. [Ventilation.] Each room in which a standard ventilating stove is installed shall be provided with a ventilating flue placed close to the stove.

The vent flue shall be of the same area as the fresh air supply and run through and above the roof. Vent flues of not over one hundred and fifty (150) square inches of area shall be enclosed with walls of brick or concrete not less than four (4) inches thick, and vent flues of a larger area shall be made of brick walls not less than eight (8) inches thick, brick walls four (4) inches thick lined with tile flue lining, or monolithic concrete walls not less than four (4) inches thick.

Openings to vent flues shall be placed at the floor line, and if vent registers are used the same shall be fifty (50) per cent. larger than the area of the flue.

Title 11.

STANDARD STAND PIPE AND HOSE.

Section 1. [Standard stand pipes.] Where the vertical rise of stand pipes is forty (40) feet and less stand pipes shall be not less than two (2) inches in diameter; over forty (40) and less than sixty (60) feet, two and one-half (2½) inches; over sixty (60) and less than seventy-five (75) feet, not less than three (3) inches; over seventy-five and less than one hundred (100) feet, not less than four (4) inches.

Stand pipes shall connect with city water mains through cast iron pipes at least one (1) inch greater in diameter than the riser.

The size of said connections shall be increased one-half (½ inch in diameter for each additional riser over one.

At the top of each stand pipe there shall be provided a one-eighth (⅛) inch pet cock for testing purposes.

Section 2. [Standard hose.] Hose shall be of unlined linen, not less than one and one-half (1½) inches in diameter, with smooth bore brass nozzle at least twelve (12) inches long and having a five-eighths (⅝) inch discharge.

Hose lengths shall be not greater than seventy-five (75) feet, and when hose of the above lengths will not reach the extreme portions of the story, then additional stand pipes and hose shall be provided.

Hose shall be attached to two (2) inch outlets with heavy wheel valves and be provided with substantial swinging hose racks and be connected up, be kept in good repair and working order, and always ready for immediate use.

Title 12.

STANDARD FIRE EXTINGUISHERS.

Section 1. [Three-gallon chemical fire extinguishers.] A. CAPACITY. Extinguishers shall be of a capacity of not less than three (3) gallons, nor more than three (3) gallons four (4) ounces to lower edge of collar, and not less than *two and* one-half (2½) gallons nor more than two and one-half (2½) gallons four (4) ounces to the filling indicator.

B. SHELL. The cylinder shall be not less than number eighteen (18) B. and S. gauge hard copper, dome and bottom to show at least number seventeen (17) B. and S. gauge in all parts after re-spinning.

Shell shall be safe against distortion or strain with three hundred and fifty (350) pounds hydrostatic pressure held for one minute. Each shell shall be so tested and marked before shipment.

Openings for cast fittings shall fit close, and inside of shell shall fit close to flanges of fittings.

Shell shall have stiffening ring at lower edge.

Fitting indicator shall be of metal.

Riveted and beaded seams if used, shall be thoroughly sweated, and rivet holes accurately punched to meet and avoid buckling of the sheets. Both laps of beaded seams shall fit each other and be proportioned to be sprung together before soldering.

C. COLLAR. The inside diameter of collar shall be not less than two and one-half (2½) inches in the clear, and be of sufficient height to prevent cap from reaching the dome with the gasket removed.

D. CAP. Caps shall screw to the collar, and threads be protected against exposure to the contents of the extinguisher.

A gasket not less than one-sixteenth (1-16) *inch thick* nor less than five-sixteenths (5-16) inches wide shall be used at the joint and fit the recess snugly.

Caps shall have four or five threads holding.

Caps shall be made of hard red brass and have ample metal back of gasket recess.

Cap shall have a ring form of handle about six (6) inches in diameter. Casting shall allow one (1) inch clearance between the upper surface of the cap and the lower surface of the ring, and the finished cap when coated, but without the cage attached, shall weigh about two (2) pounds.

E. OUTLETS. The outlet casting shall have not less than one-quarter (¼) inch internal diameter at any point and not less than three-thirty-seconds (3-32) inch wall.

Hose connection to outlet casting shall be so designed that the hose may be detached and replaced without liability of injury to hose or obstruction of stream.

The outlet shall be located midway between the center of the top handle and the center of the labels.

Distance between the ring casting and outer surface of outlet casting shall be not more than one (1) inch.

Outlet shall be screened with a brass netting or perforated plate, heavily coated.

F. COATING. The shell, collar, cap, outlet and hose coupling except threaded surfaces, shall be heavily, evenly and completely coated on the inside at the factory with an alloy of tin and lead.

Joints and rivets, if any, shall be covered so as to form a smooth interior surface.

G. HANDLES. A ring form of handle shall be used on cap.

Bottom handle shall allow not less than one and one-eighth (1⅛) inch free clearance for the hand, and side handle not less than three and one-half (3½) inches free clearance in width.

Bottom handle shall be parallel with the top handle, not to rely entirely on solder as a fastening, and shall be rigid, not hinged.

Top handle shall be diametrically opposite direction plates, securely riveted and soldered to shell not extending through it.

It should preferably be cast, formed to fit the contour of the shell where it is riveted, and shall be strong enough to allow a lever to be used between it and the ring on the cap in case the cap is tightly stuck.

H. CAGE. The cage shall support the bottle at the bottom, and be arranged to allow ready removal and replacement of the bottle without danger of dropping the bottle or spilling the acid.

Cage shall not rely entirely on solder for securing parts.

All joints and connections shall be mechanically secured without solder and then be soldered for protection against corrosion and the whole cage heavily coated with alloy of lead and tin.

Cage shall have no sharp corners or projections which can mar the collar casting as the cage passes through.

Cage shall fit the bottle closely and hold the bottle in place when inverted.

Cages depending upon movable parts in discharging extinguishers and cages supporting bottle by the neck shall not be used.

I. BOTTLE. The acid line shall be blown in or etched on the glass and be accurately placed.

J. HOSE. Hose shall be of three-ply rubber capable of withstanding a hydrostatic pressure of four hundred (400) pounds to the square inch held for five minutes.

Hose shall be so attached to the outlet that coupling will withstand a hydrostatic pressure of three hundred and fifty (350) pounds per square inch held for one minute.

Hose shall be attached to hang vertically and so that it can be readily removed and replaced when necessary.

Hose shall be of such a length that when hanging vertically, tip of nozzle will just clear any plain surface on which the extinguisher is placed.

K. NOZZLE. The nozzle shall be of such material as will not be affected by corrosion, and be cast free from blow holes, checks or other imperfections, interior to be finished smooth and be tapered toward outlet.

The discharge opening shall be not less than one-eighth ($\frac{1}{8}$) inch nor more than three-sixteenths (3-16) inch in diameter, preferably drilled straight for about three-sixteenth (3-16) inch *back from outlet* and chamfered.

L. CHEMICAL CHARGE. Sulphuric acid and bicarbonate of soda shall be in such proportions that a pressure cannot be obtained in excess of three hundred and twenty-five (325) pounds, with soda solution at one hundred and twenty (120) degrees Fahr.

Stream shall not show acid reaction.

The charge shall be composed of from one and one-quarter (1¼) to one and one-half (1½) pounds bicarbonate of soda, and three and one-half (3½) to four (4) ounces fluid measure sulphuric acid.

M. MARKING. Directions for operating shall be plainly and permanently fixed on the side of the shell opposite the top handle, and so as not to be back of the hose.

Letters shall not be less than one-half (½) inch in height and of a different color than the background.

Directions for recharging shall be plainly and permanently fixed on the side of the shell directly under the directions for operating. These shall state that the extinguisher if not used for a fire, shall be discharged and recharged at least once a year and record of the same kept on a card attached to the extinguisher. They shall also state that whenever the extinguisher is discharged it shall be entirely emptied and be thoroughly cleaned before refilling, and that the extinguisher shall be protected from frost.

Cards shall be of line, sized and attached to the upper handle by brass wire or ring, or be set in a metal frame soldered to the shell.

N. In General. Extinguishers shall be constructed and finished in a thoroughly workmanlike manner, to have as few parts as possible, to be free from moving parts subject to corrosion, and shall not be equipped with shut-off valves.

The acid shall be applied slowly,

The extinguisher shall be so designed and proportioned that the maximum pressure will be reached in from twenty-five (25) to thirty-five (35) seconds and so as not to exhaust the liquid in stream under from fifty (50) to sixty-five (65) seconds, the solution being at ordinary temperature.

See section 2 — barrels of salt water, and section 3 — pails of sand.

Section 2. [Barrels of salt water.] In buildings not kept heated at all times during cold weather, barrels of salt water may be used in place of three-gallon chemical fire extinguishers. Standard barrels thirty-one and one-half (31½) gallons shall be used and be provided in the proportion of one (1) barrel to each two thousand (2000) square feet of floor area or less. Barrels shall be kept filled to within (4) inches of top with strong salt water, and each barrel shall be provided with two (2) round-bottom buckets placed on a shelf immediately over the barrel. Buckets and barrel shall be marked "For fire only" in red letters not less than two (2) inches high.

Barrels shall be prominently exposed to view and always accessible.

Section 3. [Sand pails.] Sand pails shall be provided in addition to three (3) gallon chemical fire extinguishers or barrels of salt water in rooms where painting, varnishing, dipping and japanning are done, or where oil is handled. Pails shall be of not less than three (3) gallons capacity and the same shall be kept filled at all times with sand.

Pails shall be provided in the proportion of one (1) pail to each three hundred and twenty-five (325) square feet of floor area or less.

Each pail shall be marked in red letters not less than two (2) inches high "for fire only."

Pails shall be placed on shelves within easy reach, be equally distributed over the area of the room, be prominently exposed to view and always accessible.

OHIO STATE BUILDING CODE.

PART 4.

SANITATION.

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PART 4.

SANITATION.

Title 1.

SIZE OF PIPES.

Section 1. [Size of house drains, soil a waste stacks, mains and branches.] Twe (20) square feet of roof or yard area in ho zontal projection counts as one fixture.

Three feet of urinal trough or wash sink cou as one fixture.

One bath, basin or sink or smaller fixt counts as one fixture.

One pedestal urinal or slop hopper sink cou as two fixtures.

One water closet counts as four fixtures.

Dimensions given refer to the inside diamet

MAXIMUM NUMBER OF FIXTURES CONNECTED TO

Pipe, Size of	Waste Soil and Waste Combine.		Soil Pipe Alone.	
	Branch.	Main.	Branch.	Main.
1¼"	1 fixture	1 fixture		
1½"	2 fixtures	2 fixtures		
2"	3 fixtures	4 fixtures		
3"	4 fixtures	8 fixtures	1 water closet	2 water closets
4"	32 fixtures	64 fixtures	8 water closets	16 water closets
5"	72 fixtures	144 fixtures	18 water closets	36 water closets
6"	144 fixtures	288 fixtures	36 water closets	72 water closets
7"	252 fixtures	504 fixtures	63 water closets	126 water closets
8"	420 fixtures	840 fixtures	105 water closets	210 water closets

Providing that the number of water closets on and soil pipe, with or without other fixtures, shall never exceed the number given in either of the last two columns.

Where it is impractical to use four (4) inch soil pipe for water closets, three (3) inch soil pipe may be used for vertical stacks, and shall conform with the number of fixtures in the above table. If earthenware drains or sewers are used the diameter of the pipe shall be increased one size over the above "table."

Section 2. [Size of fixtures, traps and wastes.] The size (inside diameter) of the trap and waste branches for a given fixture shall never be less than the following:

Kind of Fixtures.	Size in Inches.	
	Trap.	Branch.
Water closet	2¼	3
Slop sink with trap combined	3	3
Slop sink ordinary	2	2
Pedestal urinal	3	3
Floor drains or wash	3	3
Yard drains or catch basins	3	3
Urinal trough	2	2
Laundry tub	1½	1½
Kitchen sinks (Residence)	1¼	1¼
Kitchen sinks (large) hotels or public	2	2
Pantry or bar sinks	1¼	1¼
Pantry sinks (large) hotels or public	1½	1½

Kind of Fixtures.	Size in Inches.	
	Trap.	Branch.
Wash basins, one only	1¼	1¼
Bath tubs	1½	1½
Shower baths	2	2
Sitz bath	1½	1½
Safe wastes and drips	1	1
Drinking fountains	1¼	1¼
Fountain cuspidors	1¼	1¼

Section 3. [Size of vent pipe stacks.] The following table gives the size of vent pipes and the maximum number of fixtures that they shall serve.

Size of Pipe.	Number of Traps. 1½″ or less.	Number of Traps. 2″	Number of Water Closets.
1½″ Pipe	3	1	
2 ″ Pipe	12	6	3 or less
2½″ Pipe	24	12	6
3 ″ Pipe	48	24	12
3½″ Pipe	100	50	25
4 ″ Pipe	160	80	40

For five (5) inch traps and over the vent shall be one-half the diameter of the trap.

Vent pipes shall be increased in size every thirty (30) feet of their length.

Section 4. [Size of local vent pipe stacks.] In the following table the unit of a local vent for a single water closet, pedestal urinal, urinal bowl, slop hopper or sink, and to each three feet of urinal trough or gutter shall be a two (2) inch pipe.

Size of Pipe.	Maximum developed length in feet. Mains.	Number of Closets Vented.	
		Branches.	Main Vertical Part.
2″	40	1	1
3″	100	3	6
4″	150	6	12
5″	200	10	20
6″	250	16	32
7″	300	23	46
8″	350	32	64
9″	400	42	84
10″	450	56	112
11″	500	72	144
12″	550	90	180

The dimensions given refer to the inside diameter of pipe.

Where the number of fixtures exceeds the limit of the tables, sizes and length shall be increased in corresponding ratio.

Title 2.

MATERIALS, QUALITY AND WEIGHTS.

Section 1. [Earthenware pipe.] QUALITY OF PIPE. All earthenware pipe and fittings shall be of the hub or spigot pattern, cylindrical in section, thoroughly vitrified through the thickness of the pipe, and thoroughly salt glazed over the entire inner and outer surfaces. Each length shall be of a uniform caliber, smooth bore throughout, without twist or wind, and free from fire cracks, blisters, flaws or other defects.

Earthenware pipe used for tile drains shall be without hub or socket, and can be either cylindrical or D shaped in section.

Section 2. [Cast iron pipe.] A. QUALITY OF PIPE. All cast iron pipe and fittings shall be sound, cylindrical and smooth, free from cracks, sand holes and other defects, of a uniform thickness and not lighter than the commercial grade known as "extra heavy."

B. WEIGHTS OF CAST IRON PIPE. Pipe shall not weigh less than the following per lineal foot, which weights include the hubs.

Diameter of Pipe.	Weights per Foot.
2-inch	5½ pounds
3-inch	9½ pounds
4-inch	13 pounds
5-inch	17 pounds
6-inch	20 pounds
7-inch	27 pounds
8-inch	33½ pounds

C. COATING FOR CAST IRON PIPES A
TINGS. All pipe shall be coated at the fac
underground use with asphaltum or
pitch.

Pipes and fittings above ground may
or coated with asphaltum or coal tar

Section 3. [Wrought iron pipe.] A.
NESS AND WEIGHT OF PIPE. All wrou
pipe must be of standard lap welded pip
less than the following thickness and

Diameter.	Thickness.	Weight p eal F
1½ inches	.14 inches	2.68 pc
2 inches	.15 inches	3.61 pc
2½ inches	.20 inches	5.74 pc
3 inches	.21 inches	7.54 pc
3½ inches	.22 inches	9.00 pc
4 inches	.23 inches	10.66 pc
4½ inches	.24 inches	12.34 pc
5 inches	.25 inches	14.50 pc
6 inches	.28 inches	18.76 pc
7 inches	.30 inches	23.27 pc
8 inches	.32 inches	28.18 pc

B. QUALITY AND COATING OF PIPE A
TINGS. All wrought iron pipe used
waste and vent pipes shall be galvaniz
and the malleable fittings galvanized,
iron fittings galvanized or coated with as
or coal tar pitch.

The fittings for wrought iron waste,

refrigerator wastes shall be of cast or malleable iron, or brass recessed drainage fittings with smooth interior waterway and threads tapped out of solid metal, so as to give a uniform grade to branches of not less than one-fourth (¼) of an inch per foot.

Threaded fittings for vents and back vents two (2) inches, or less shall be galvanized malleable iron.

Fittings of larger dimensions shall be brass, galvanized malleable iron, or cast iron, galvanized or coated with asphaltum or coal tar pitch.

Section 4. [Lead pipe.] WEIGHTS OF LEAD PIPE. All pipe used for branch soil, waste, vent or flush pipes shall be of best quality of drawn pipe, of not less weight per lineal foot than shown in the following table:

Lead branch soil, waste, vent or flush pipes including bends and traps.

Internal Diameter.	Weights per Foot.
1 inch	1 lb. 8 oz.
1¼ inch	2 lb. 8 oz.
1½ inch	3 lb. 8 oz.
2 inch	4 lb. 0 oz.
3 inch	6 lb. 0 oz.
4 inch	8 lb. 0 oz.

Section 5. [Brass pipe and fittings.] Brass pipe for soil, waste and vent pipes shall be thoroughly *annealed*, seamless drawn or brazed

tubing having weight and outside diameter of not less than the following:

Nominal Diameter.	Gauge No. B. & S.	Thickness.	Weight.
1¼"	12	5-64"	1.08 lbs.
1½"	12	5-64"	1.32 lbs.
2 "	12	5-64"	1.79 lbs.
2½"	10	7-64"	2.82 lbs.
3 "	10	7-64"	3.41 lbs.
4 "	8	1-8 "	5.74 lbs.
5 "	8	1-8 "	7.22 lbs.
6 "	8	1-8 "	8.71 lbs.

For flush and local vents No. 18 gauge may be used. Drawn tubing only shall be used for the larger sizes, two and one-half (2½) inches to six inches, and brazed tubing may be used for the smaller sizes, one and one-quarter (1¼) to two (2) inches. Brass fittings shall be good quality cast brass having a thickness in their walls not less than the tabular thickness given above for the corresponding brass pipe. The thickness of the tapped ends to be one and one-half (1½) times the thickness of the corresponding pipe.

Section 6. [Sheet lead.] Sheet lead for roof flashing shall not weigh less than three (3) pounds per square foot, and shall extend not *less than* six (6) inches from the pipe and the *joint shall* be made water tight.

Section 7. [Copper.] Copper tubing when used for inside roof conductors or leader connections shall be seamless drawn tubing, not less than number fourteen (14) B. & S. gauge; and when copper is used for roof conductor or leader flashings it shall be not less than number eighteen (18) gauge, and for local vents and interior ventilating pipe, spiral or gauge number twenty-six (26).

Title 3.

JOINTS AND CONNECTIONS.

Section 1. [Water and air tight joints.] All joints and connections mentioned under this title shall be made gas and water tight.

Section 2. [Earthenware pipes.] Joints between the hub and spigot shall be half filled with a gasket of oakum and then by finishing the joint with mortar made of one (1) part fresh Portland cement and one (1) part clean sharp sand.

Each joint shall be carefully banked, wiped and cleaned.

Section 3. [Earthenware to iron pipe.] Underground joints between earthenware and iron pipe shall be made the same as above required for earthenware pipe.

Section 4. [Cast iron pipes.] All joints in cast iron pipe shall be made with pure lead well calked, and not less than one (1) inch deep, and no paint, varnish or putty will be allowed until the joints have been tested.

Oakum or other efficient method shall be used to prevent the lead from running through the joint.

Section 5. [Wrought iron and brass.] Joints in galvanized iron or brass pipe shall be standard screw joints, and all burs or cuttings shall be removed. All joints shall be made up of white or red lead or mineral paint.

Section 6. [Wrought iron and brass to cast iron.] Connections between wrought iron or brass to cast iron shall be either a calked joint (section 4) or screwed joint (section 5). All unions used on the sewer side of traps shall be ground faced and shall not be concealed or enclosed. No slip joint connection will be allowed on the sewer side of the trap.

Section 7. [Lead pipe.] Joints in lead pipe, or between lead pipes and pipes of brass or copper shall in all cases be full wiped joints.

Section 8. [Lead to iron pipe.] Joints between lead and iron pipes shall be made by e
heavy cast or drawn screw nipple, with eithe
calked joint or a soldered nipple with a threa
joint or approved concaved brass bushings. F
rules shall be made of best quality of red br
not less than four and one-half (4½) inches l
nor less than one-eighth (⅛) of an inch in th
ness where a round joint is made. Where
or similar ferrules are used they shall ext
not less than one-quarter (¼) inch above the h

**Section 9. [Earthenware with metal fl
connections.]** Fixtures with earthenware tra

connected directly with soil or waste pipes shall have a solid brass floor plate, not less than three-sixteenths (3-16) of an inch thick, soldered to the lead bend or pipe, and screwed to the floor where joist are of wood, and where brass or iron is used, screwed to the same, and bolted to the trap flange. Joint shall be made gas tight with an asbestos graphite ring, asbestos string gasket washer, red or white lead, or perfect screw joint.

In wooden joist construction the connection between the earthenware and soil pipe shall have a suitable length of lead pipe between the wiped joint and the under side of the floor.

Section 10. [Increasers and reducers.] Where different sizes of pipe or pipes and fittings are to be connected, proper size increases or reducers, pitched to an angle of forty-five (45) degrees between the two sizes shall be used.

Section 11. [Prohibited joints.] Any fitting or connection which has or forms an enlargement, chamber or recess with a ledge, shoulder or reduction of the pipe area in the direction of the flow on the outlet or drain side of any trap, are prohibited.

Section 12. [Expansion bolts.] Connections or hangers, pipe supports or fixtures settings with masonry or stone backing shall be made with expansion bolts without the use of wood plugs.

Title 4.

TRAPS AND CLEANOUTS.

Section 1. [Traps.] A. WHERE USED. Each single fixture, except those wasting as prescribed under title No. 11, shall be separately trapped by a water seal trap, placed as close to the fixture as possible.

B. KIND OF TRAPS. Every trap shall be self-cleaning. No form of trap which depends upon the action of movable parts for its seal shall be used. No trap which depends upon concealed interior partitions for its seal or which has an interior partition that, in case of defect, would allow the passage of sewer air, shall be used.

Every drum trap shall be so installed that the water seal will protect the trap screw from sewer air.

Traps for bath tubs, basins, sinks, or other similar fixtures shall be made of lead, brass or of iron enameled inside.

C. WATER SEAL. Each trap shall have a water seal of not less than two (2) inches.

D. CLEANOUTS AND VENT CONNECTIONS. Each trap except those in combination with fixtures where the trap seal is plainly visible and accessible shall be provided with a brass trap screw.

Traps placed between the floor shall have a brass trap screw for cleaning, in plain view or flush with the floor, or readily accessible from or under the floor.

E. TRAP LEVELS AND PROTECTION. All traps shall be rigidly supported and set true with respect to their water level, and shall be so located as to protect their seals.

F. TRAPS PROHIBITED ON DRAINS. There shall be no trap at the foot of soil or waste pipes upon the house drain or house sewer except where one such drain or sewer is used exclusively for conducting rain water or surface water to a house drain or sewer.

G. OTHER WASTE FIXTURES TO WATER CLOSET TRAP PROHIBITED. In no case shall the waste from a bath tub or other fixture be connected with a water closet trap.

H. OVERFLOW CONNECTIONS. Overflow pipes from fixtures shall in each case be connected on the inlet side of the trap.

I. CELLAR DRAINS. Cellar drains will be permitted only when they connect to a trap with a permanent water seal.

Section 2. [Cleanouts.] A. SIZE. Cleanouts shall be the same size as the pipe up to four (4) inches in diameter and not less than four (4) inches for larger pipe or traps.

Cleanouts shall be at least four (4) inches long with air tight screw joints made of brass.

B. WHERE REQUIRED. Cleanouts shall be provided as follows, at the foot of all vertical lines of soil pipe, and at the end of each horizontal line, distance between the cleanouts shall not exceed fifty (50) feet.

There shall be at least two (2) four (4) inch cleanouts provided in the house drain; one made with a full size Y branch just inside of the wall near the house drain and the house sewer connection, and the second near the end of the house drain, or at the base of the soil or waste stacks. Intermediate cleanouts may be made with Ts.

Any vertical soil, waste or vent pipe having an open and readily accessible from the roof and without change of direction in its entire length shall not be required to be provided with a cleanout other than at its base.

C. MANHOLES. All underground traps and cleanouts inside of a building, except where the cleanout traps are flush with the cellar floor, shall be made accessible by manholes with proper metallic covers, and all exterior underground traps with inaccessible cleanouts shall also be placed in manholes.

D. LOCATION. All traps and cleanouts shall be located so as to be easily accessible for cleaning.

Title 5.

GENERAL REGULATIONS.

Section 1. [Grade of horizontal pipes.] All horizontal piping shall be run in practical alignment and at a uniform grade of one-half ($\frac{1}{2}$) inch per foot when possible, but in no case shall the grade be less than one-quarter ($\frac{1}{4}$) of an inch to one (1) foot for soil or waste pipes, and house drains suspended by iron hangers upon piers, or posts or wall ledges; and not less than one-eighth ($\frac{1}{8}$) of an inch per foot for vent or ventilating pipes, house sewers and underground drains.

Section 2. [Change of direction.] All *drainage* and plumbing pipes shall be rigidly secured or supported to keep their alignment and grade, and all changes of directions, either horizontal or vertical, shall be made with the appropriate use of forty-five (45) degrees "Ys," half "Ys," sanitary "Ys," long sweep quarter sixth, eighth or sixteenth bends, with short nipples when screw joints are used.

Increase or reduction in size shall be made by the use of proper fitting.

Every vertical line of soil or waste pipe shall have no less than eighteen (18) inches of iron pipe, run horizontally at its base.

Section 3. [Prohibited fittings.] No double hub double T, Y or sanitary T branches shall be used on horizontal runs, nor shall double hubs or straight crosses be used on the soil or waste pipe.

Section 4. [Offsets in mains.] Offsets in the mains of all sacks shall be avoided if possible, but when unavoidable they shall be made with forty-five (45) degree fittings, if possible

Section 5. [Dead ends.] In the installation of any plumbing system, all dead ends in pipes shall be avoided.

Section 6. [Drainage excavation.] All excavations required to be made for the installation of a house drainage system, or any part thereof, within the walls of a building, shall be open trench work. All such trenches shall be kept open until the piping has been inspected.

Parties in charge of the work shall notify the inspector twenty-four (24) hours before work is ready for inspection, failure of the inspector to inspect the same at the time notified shal allow the party in charge to proceed with the work.

Section 7. [Separate trenches.] Each system of piping shall be laid in a separate trench, except sanitary and surface sewers may be laid in the same trench.

Trenches may be benched eighteen (18) inches for lighter pipes if not in violation of any city ordinance.

Section 8. [Relieving arches.] Where pipes pass under walls the same shall, if possible be placed under openings, and in all cases where pipes pass under or through walls they shall be provided with a relieving arch or lintel.

Section 9. [Stack supports.] All free standing stacks shall be thoroughly supported on concrete masonry piers at their base, and those forty (40) feet or more in height shall also be provided with foot rests at their base and also with floor rests, or supports at every ten (10) feet intervals.

The pipe supports according to their location shall be made either with heavy iron posts, hangers, wall brackets or steel fittings, concrete or masonry piers, provided that no brick pier shall be less than eight (8) [inches] square. The use of pipe hooks shall be prohibited for larger than one and one-half (1½) inch pipes.

Title 6.

HOUSE SEWERAGE AND DRAINS.

Section 1. [Independent system.] The drainage and plumbing system of each new building or new work installed in an existing building shall be entirely separate and independent of that of any other building, except as provided in section 2; and wherever available every building shall have an independent connection with a public or private sewer.

Section 2. [Exceptions permissible.] Where one building stands in the rear of another on an interior lot, and no private sewer is available, or can be made for the rear building, through an adjoining alley, court, yard or driveway, the house drain from the front building may be extended to the rear building and the whole will be considered as one house drain.

Section 3. [Connections with cesspools.] When a sewer is not available, drain pipes from buildings may be connected with cess pools or receiving vaults as prescribed in Title 16 of this code, provided, however, that no water closet shall be connected to a leaching cesspool.

Under the various titles of Part 2, where a sewerage system is mentioned, the same is meant to include either a public sewerage system or a private sewerage system connected with a cesspool or receiving vault.

Section 4. [Old house sewers.] Old house drains may be used in connection with new buildings or new plumbing, only when they are found, on examination and test, to conform in all respects to the requirements governing new sewers or drains, as prescribed in this code.

If the old work is found defective, the inspector shall notify the owner to make the necessary changes to conform with this code.

Section 5. [House drains under ground.] All house drains shall, wherever possible, be brought into the building under ground below the level of the basement or cellar floor.

Section 6. [Kind of pipe.] All house drains shall be of extra heavy cast iron pipe, with well leaded and calked joints, or of earthenware pipe jointed with mortar composed of one part best Portland cement and one part clean, sharp sand.

Section 7. [Drains to curb.] Where there is no sewer accessible the drainage of surface inlets and rain water conductors, shall be drained separately to the curb line where practicable by drain pipes not less than four (4) inches in diameter and discharge into the public gutter, unless otherwise permitted by the proper authority.

Section 8. [House sewer.] The drain containing the house sewer, beginning three (3) to five (5) feet outside the building wall, shall consist of iron pipe or of earthenware pipe not less than the size of the slant or opening in the main sewer.

They shall not be laid closer than three (3) feet to any exterior wall, cellar, basement, well or cistern, or less than two (2) feet deep. Change in direction shall be made with long curves, one-eighth (1/8) bends or Ys.

Title 7.

YARD, SUBSOIL AND OTHER DRAINS.

Section 1. [Drainage of yards and areas.] *When* yard and area drains are connected with the house drains each shall be effectually trapped; or, the various drains from the yards and areas may be connected together and be controlled by a single trap.

Traps shall be installed for drains which connect directly with a sewer intended to carry surface water.

Section 2. [Earthenware yard drains.] Barn, stable, yard and roof leader drains may be of earthenware and all such drains shall be trapped and connected with the house sewer outside of the house drain connection.

No earthenware yard drain, or drains from kitchen sinks shall be less than four (4) inches.

Overflow pipes from cisterns shall not connect directly with any house sewer.

Section 3. [Subsoil drains.] Where subsoil drains are placed under the cellar floor or used to encircle the outer walls of a building, the same shall be made of open jointed four (4) inch drain tile.

Open jointed drain tile shall be properly trapped before entering the house drain.

Section 4. [Back pressure valves.] Where a floor or open jointed drain tile is connected to a house sewer or drain, each floor wash or connection shall be protected from back pressure by a gate or back pressure valve.

Section 5. [Exhaust, blow-offs and drip pipe connections.] The exhaust, blow-off, sediment or drip pipe from a steam boiler shall not connect directly with any sewer, drain, soil or waste pipe. Such pipes shall discharge into the top and above the line of discharge of a suitable closed tank or condenser made of wrought or cast iron, provided with a relief pipe, of at least three (3) inches in diameter, extending to the outer air above the roof.

The waste from said tank or condenser, shall be taken from the bottom and be at least one size larger than the inlet, but not less than three (3) inches in diameter, and provided with a trap that has a seal of not less than twenty-four (24) inches and wherever possible shall connect to the house sewer and not to the house drain.

Section 6. [Hot water discharge prohibited.] Water heated to over one hundred and forty (140) degrees, Fahrenheit, shall not be allowed to enter any street sewer, drain or lateral.

When blow-off tanks discharge water at a higher temperature they shall be provided with a cooling device.

Section 7. [Elevator connections.] All direct connected hydraulic elevators, lifts or pressure machines shall be provided with an intermediate tank of sufficient capacity as to discharge its waste without pressure into any sewer, drain, soil or waste pipe. Such tanks shall be trapped and where there is danger of back pressure from sewer there shall be placed on its outlet side a sewer or back water valve.

Title 8.

ROOF CONDUCTORS AND LEADERS.

Section 1. [Conductors not to connect.] The metallic conductors or roof leaders or downspout wastes, and the surface and ground water drains, wherever possible, shall be connected with a sewer, but they shall not be connected to house sewers, which discharge into sanitary sewers intended for the carriage of sewage only.

Section 2. [Inside conductors and roof leaders.] When placed within the walls of any building or run in an inner or interior court, or ventilating or pipe shaft, all conductors or roof leaders shall be constructed as prescribed for soil pipe.

Section 3. [Connections with conductors prohibited.] .Conductor pipes shall not be used, as soil, waste or vent pipes, nor shall any soil, waste or vent pipes be used as conductors.

Section 4. [Defective conductor pipes.] When an existing sheet metal conductor pipe within the walls of any building becomes defective such conductor shall be replaced by one which conforms to this code.

Section 5. [Outside conductors.] When outside conductors or downspouts of sheet metal are connected with the house drain, they shall be so connected by means of not less than one length of extra heavy cast iron pipe extending vertically at least four (4) feet above the grade line.

Title 9.

SOIL, WASTE AND VENT PIPES.

Section 1. [Material used.] All main and branch soil, waste, vent and back vent pipe shall be of iron, lead, brass or copper.

Section 2. [Waste pipe stacks.] The main waste pipe stack carrying a kitchen sink or more than three (3) other fixtures shall not be less than two (2) inches in diameter.

Section 3. [Roof extensions.] All soil and waste pipes receiving the discharge of any fixtures shall be extended the full calibre at least two (2) feet above the roof and at least five (5) feet when such roof is used for other purposes than weather covering for building.

In no case shall a vent pipe through the roof be less than four (4) inches.

Change in diameter shall be made by long increaser, at least one (1) foot below roof.

Section 4. [Roof joints.] The joints at the roof shall be made water tight by the use of proper sheet copper or lead plate, with a sleeve not less than six (6) inches long made to fit the pipe tightly. Plate shall be not less than one foot six inches (1′ 6″) square.

Section 5. [Terminals.] The roof terminals of all vent pipes shall be at least three (3) feet above any door, window, scuttle or air shaft when located at distance less than twelve (12) feet from such terminal.

Section 6. [Terminals adjoining high buildings.] No soil, waste or vent pipe extension of any new or existing building shall be run or placed on the outside of a wall, but shall be carried up in the inside to the roof.

In the event that a new building is built higher than an existing building, the owner of the new building shall not locate windows within twelve

(12) feet of any existing vent stack on the lower building, unless the owner of such new building shall defray the expenses of, or shall himself make such alteration to conform with section 5, of this title.

It shall be the duty of the owner of the lower or existing building to make such alteration therein upon the receipt in advance of money, or security therefor, sufficient for the purpose, from the owner of the new or higher building, or to permit at the election of the owner of the new or higher building the making of such alteration by the owner of said new or higher building.

Section 7. [Prohibited connections.] In no case shall any fixture connection except water closet or similar fixtures be made to a lead bend.

No vent pipe shall be used as a waste or soil pipe.

Section 8. [Branch soil and waste extensions.] Any vertical branch rising more than ten (10) feet, or any lateral branch running more than twenty-five (25) feet from the main soil line, shall be continued full size to a point above the roof in the same manner as required for main soil pipes, or may be returned to main vent pipe full size.

Section 9. [Vents—length from trap.] The back vent of any fixture trap shall be as close to the traps as practicable consistent with its location and effectiveness. The developed length of the waste pipe of any fixture from its trap to the vent pipe shall not exceed twenty-four (24) inches.

Section 10. [Main vents.] Every building in which water closets are installed shall have at least one four (4) inch soil pipe stack, extending through the roof.

All main vents shall be connected at their base to the main waste or soil pipe at or below the lowest branch of fixtures fitting, and shall be extended through and above the roof.

Section 11. [Vent pipe grades and connections.] All branch vent and back vent pipes shall be free from drops or sags and be so graded and connected as to drip back to the soil or waste pipe by gravity.

On horizontal runs such connections shall be taken off above the center line as near the crown as possible and rise at least six (6) inches above such crown before being offset horizontally.

Section 12. [Back vents for fixtures.] Where bath rooms, water closets or other fixtures are located on opposite sides of a wall or partition, or are directly adjacent to each other in an inseparable dwelling, such fixtures may have a common soil or waste pipe and vent pipe stack.

Section 13. [Trap back-vented.] Every fixture trap shall be protected from siphonage and air circulation assured by means of a vent or back-vent pipe.

Section 14. [Back venting — water closets.] Every earthenware fixture with trap combined shall be provided with a back vent horn.

Every water closet, pedestal urinal and slop sink having a floor connection, shall be back vented from the soil or waste branch and preferably on the top of the branch. When connected with the vertical arm of a bend it shall be made above the top of the horizontal branch.

Section 15. [Back vents — not required.] A. Where two (2) water closets located on the same floor, discharge into a double Y or TY in a soil or waste stack, they need not be back vented if such fixtures do not exceed the three (3) foot limit, without other fixtures above them.

B. When two fixtures other than water closets discharge into a double Y or TY, and there are no other fixtures discharging above them said fixtures may be back vented through a common vent or back vent pipe.

C. No back vents shall be required on a back water trap, or sub-soil catch basin trap.

Section 16. [Location of fixtures.] No trapped plumbing fixtures shall be located in any room or apartment which does not contain a window placed in an external wall of the building or is not provided with a system of ventilation.

Compartments containing not more than four (4) water closets or their equivalent shall be located in an apartment containing windows placed in the external walls of the building or shall be provided with a mechanical means of ventilation which will change the air at a normal temperature at least six (6) times per hour.

Compartments containing more than four water closets or their equivalent shall be located either in an apartment containing windows and provided with a gravity or mechanical system of ventilation which will change the air at normal temperature not less than six (6) times per hour; or, may be placed in a compartment without windows in the external wall of the building, providing a mechanical system of ventilation is installed which will change the air at normal temperature not less than six (6) times per hour.

Ventilation from toilet rooms shall be separated and distinct and have no connection whatever with the other ventilating ducts in the building.

Title 10.

REFRIGERATOR, SAFE AND SPECIAL WASTES.

Section 1. [Refrigerator wastes.] [1]No waste pipe from a refrigerator, ice box, bar fixture, floor, drains and soda fountains, or any other receptacle where food is stored, shall connect directly with any sewer drain, soil or waste pipe. The waste pipe shall, in all cases, empty into an open sink that is properly connected, trapped and vented the same as other fixtures. The waste pipes shall not be less than one and one-half (1½) inches for one opening, and for two to six openings it must not be less than two (2) inches, and shall have at each opening a trap and shall have cleanout put on lines and angles, so as to clear pipe, so arranged as to be properly flushed.

All waste pipes shall be continued full size through the roof.

This rule does not apply to any other fixtures nor will any other be allowed.

Section 2. [Overflow pipes.] The overflow pipes from a water supply tank shall not be directly connected with any drain, soil or waste pipe. Such pipe shall discharge upon the roof or be trapped into an open fixture and discharge.

Section 3. [Urinal safes.] Urinal platforms and safes shall not be directly connected with any drain, soil or waste pipe, except when used in combination with a urinal floor gutter.

The outlet of such gutter shall be provided with a brass strainer, a deep seal or drum trap and waste of not less than two (2) inches, with arrangements for flushing the same while in use.

If such safe waste also serves as a floor waste outlet, the trap shall be at least three (3) inches in diameter.

Section 4. [Kitchen wastes.] Kitchen or other greasy wastes from hotels, restaurants, club houses, public institutions or other establishments in which much cooking is done or greasy wastes obtain, shall be intercepted by a catch basin or a grease trap, and then conducted to the house sewer.

Section 5. [Stable wastes.] All liquid wastes from barns, stables, manure pits and stable yards shall be intercepted before entering the sewer by a suitable catch basin, properly trapped. Said catch basin shall be provided with a vent not less than four (4) inches continued through the roof.

Title 11.

FIXTURES.

Section 1. [Materials.] All receptacles used for water closets, urinals or otherwise for the disposal of human excreta, shall be either vitrified earthenware, hard natural stone or cast iron white porcelain enameled on inside. If cast iron is used, it shall be enameled or painted on the outside with at least three (3) coats of non-absorbent and non-corrosive paint.

Section 2. [Water closet bowls.] The bowls and traps for water closets shall be made in one piece and of such shape,and form as to hold a sufficient quantity of water when filled up to the trap overflow so as to completely submerge any matter deposited in them and properly flush and scour the soil pipe when the contents of the bowl are discharged, except that nothing in this section shall apply to latrine closets.

Section 3. [Visible trap seal.] All water closets, pedestal urinals or slop sinks with trap combined, shall have visible trap seals.

Section 4. [Flushing rims.] All water closets, or pedestal urinals shall be provided with flushing rims, constructed so as to flush the entire interior surface of the bowl thereof with water as prescribed in subsequent sections of this title.

Section 5. [Open plumbing.] All plumbing fixtures shall be installed or set free and open from all enclosing work.

Where practicable all pipes from fixtures shall be run to the wall.

Section 6. [Low down closets.] Water closets with low down tanks shall be of a siphon pattern, provided with re-filling devices.

Section 7. [Water closets prohibited.] Pan, valve, plunger, offset washout and other water closets except latrines having invisible seals or an unventilated space, or the walls of which are not thoroughly washed at each discharge are prohibited.

Long hopper water closets, and similar appliances shall not hereafter be installed in any building.

The provisions of this section shall also apply to the dry closet system or other system of closets in which the venting, back venting or local venting is to be made otherwise than in this code prescribed.

Section 8. [Urinals.] All urinals, troughs or gutters other than these heretofore prescribed, shall be constructed of materials impervious to moisture and that will not corrode under the action of urine. When floor gutters are used as urinals the gutters shall be made with Portland cement or other impervious material and the floors and wall within five (5) feet of such gutter shall be made equally water tight and impervious. In districts having no sewer connections copper or galvanized iron urinal troughs may be used in outhouses, sheds, barns and in yards and at least twenty (20) feet distant from any building or a better grade.

Section 9. [Wooden trays and sinks.] Fixed *wooden wash* trays or sinks are prohibited in any building or part of building designed or used for human habitation.

Section 10. [Bath tubs.] No new copper-lined wooden bath tubs shall be installed, nor shall any old fixture of this class be reconnected. Any defective bath tub condemned by the proper authorities must be removed.

Section 11. [Latrines and range closets.] Latrine or range water closets shall be made of cast iron with all interior surfaces white porcelain enameled and all other surfaces coated with non-corrosive paint; or, latrines or range closets may be of vitreous earthenware thoroughly glazed.

Latrines or ranges shall have flushing rims or other means of adequately flushing the front and rear inside surfaces constantly or at intervals. If pipes are used for such purposes they shall be made of brass.

Latrines or ranges shall be provided with automatic dumping tanks which shall discharge at intervals of not more than ten (10) minutes, and supply to each single latrine or range not less than ten (10) gallons of water at each discharge. The entire volume of water shall be delivered at once at one end of the latrine or range, passing over the entire length of the same and discharging at the other end through the sewer trap. Latrines in school buildings shall be flushed at least every three minutes during recess periods.

The bottom of latrines or ranges shall have a depression under the center of each seat, that shall retain a body of water at least one and one-half (1½) inch deep over an area of six (6) inches in diameter; gradually diminishing in all directions so that the surface of the water retained shall not be less than sixty (60) square inches.

There shall be an opening back of each seat of not less than ten (10) square inches of area, covered by a screen of non-corroding material.

The local vent duct within four (4) feet of the floor line shall be of not less than No. 27 copper, with riveted and soldered joints, shall be graduated in size in proportion to the fixtures added, and shall be installed in such a manner as to be self-draining.

Where electric current or water pressure is available, local vent ducts shall be connected to a ventilating flue provided with an electric or hydraulic exhaust fan of such a capacity or size as to create sufficient draught to carry off all offensive odors. Where electric current or water pressure is not available, ventilating flues with stack heaters shall be provided.

Covers shall be so attached that all interior surfaces of the latrines and ranges can be exposed to view.

No latrine or range shall have more than eight (8) compartments and each latrine or range shall have a separate trap not less than six (6) inches with a four (4) inch cleanout which shall be back vented by a four (4) inch pipe.

There shall be an iron top for each latrine or range section porcelain coated on the under side and each iron top shall be covered by a square *oak seat and* lid properly re-enforced.

Wood seats shall be thoroughly painted on the bottom and be varnished throughout; put together with brass hinges, cast iron braces and brackets to make them closed when not held up, and so equipped that they cannot be tampered with and can be easily opened for cleaning.

Latrines and ranges shall be substantially supported and be graduated for the proper fall toward the outlet.

Section 12. [Frost proof closets — where permissible.] Frost proof closets may only be installed in compartments which have no direct connection with any building used for human habitation or occupancy. The soil pipe between the hopper and the trap shall be not less than three (3) inches in diameter, and shall be either lead or cast iron, enameled on the inside.

Section 13. [Water supply to fixtures.] All water closets, urinals or other plumbing fixtures, shall be provided with a sufficient supply of water for flushing, to keep them in a proper and sanitary condition.

Section 14. [Water closet supply.] No water closet or urinal bowl shall be supplied directly from the water supply pipes, excepting anti-freezing closets. Every water closet or urinal bowl shall be indirectly flushed through a flushing tank of at least four (4) gallons capacity for water closet and two (2) gallons for urinals. The tank shall be properly supplied with water and the flush pipe to the water closet or urinal shall be at least one and one-quarter

(1¼) inches in diameter, except for outside hoppers and urinals.

Section 15. [Flushing tanks — groups of fixtures.] A group of urinals, on the same floor, subject to constant use as in schools and factories may be supplied from one (1) tank, if provided with an automatic simultaneous flush provided that each individual urinal shall receive not less than one (1) gallon of water at each flushing and the discharge is of such force as to cleanse each individual bowl at each flush.

Section 16. [Automatic flushing tanks.] All urinals having either intermittent or automatic flushing devices shall be flushed at regular intervals not to exceed ten (10) minutes each during the hours that such fixtures are in use.

The backs of gutter stalls to the height of three and one-half feet shall be kept constantly moist with a proportionate supply of water while in use.

Section 17. [Urinal trough and gutters.] Urinal troughs and gutters shall be flushed either by an automatic flushing tank the same as required for individual urinals, or may be flushed by a direct water supply through a brass pipe carried the full length of the trough, perforated every two (2) inches.

Section 18. [Flushing tanks.] All valves of flushing tanks shall be so fitted and adjusted as to prevent the waste of water. The water from flushing tanks shall be used for no other purposes.

Title 12.

Toilet Rooms.

Section 1. [Toilet room floors.] All floor to toilet rooms, lavatories, water closet compartments, or any other enclosure where plumbing fixtures are used within the building, shall have a waterproof floor and base made of non-absorbent indestructible waterproof material, viz.; asphalt, glass, marble, Portland cement, vitrified or glazed tile or terrazzo or monolithic composition.

Base shall not be less than six (6) inches high and shall have a sanitary cove at the floor level.

Exceptions. In apartments, tenements and dwellings, the above prescribed floor and base will not be required, but water closets shall be set on a marble slab or tile or other non-absorbent, (incombustible) [indestructible] material not less than seven-eighths (⅞) inches thick, extending at least one (1) foot in front of such closet and not less than thirty (30) inches in width.

No water closet shall be set directly on top of a wood floor.

Section 2. [Sound proof partitions.] Where toilet rooms for males and females are adjacent to each other, they shall be separated by sound proof partitions extending to the ceiling and the entrance shall be screened and the traveling distance between them shall not be less than twenty (20) feet.

Section 3. [Toilet rooms—doors and covering.] All interior doors and partitions shall be raised at least six (6) inches above the floor.

All urinals, urinal troughs or gutters shall be divided into stalls not less than eighteen (18) inches wide by partitions not less than four feet six inches (4′ 6″) high measuring from floor line and nine (9) inches wide, raised not less than one (1) foot above the floor.

No room containing water closets or urinals shall be less than seven (7) feet high.

Title 13.

INSPECTION AND TESTS.

Section 1. [Nature of tests.] All piping of a drainage or pumping system shall be given two (2) tests by the plumber in charge; first the roughing in with water, smoke, or air test; second and final with smoke in the presence of the proper authorities.

Section 2. [Material and order of test.] The material and labor for the tests shall be furnished by the plumber.

The tests shall be made in the following order: 1st, the house drain; 2d, the soil and waste vents and all vertical piping; 3d, the final on the whole system. The first and second tests may be combined, but the second shall not be made until after the first.

Section 3. [House drains.] The house drain shall be tested with the water, smoke or air test. All alterations, repairs or extensions which shall include more than ten (10) feet, shall be inspected and tested.

Section 4. [Stable, garage and yard drains.] If a stable, garage or any part of a stable is used for human habitation the same tests and inspection of the plumbing and drainage system thereof shall be made as in the case of an ordinary dwelling.

Section 5. [Conductor pipes.] Conductor pipes and their roof connections within the walls of buildings, or conductor branches on the outside system where such branches connect with the house drain or are less than three (3) feet from the wall of the building shall be tested by the water test.

Section 6. [Covering of work.] No part of any plumbing or drainage system shall be covered until it has been inspected and tested and approved, except as previously provided for in title 5, section 6.

Section 7. [Fixtures — final test.] When a plumbing drainage system is completed and the water is turned on and the traps filled, it shall be inspected and tested. When the location or style of any fixture is changed it shall be inspected.

Section 8. [Water and air test.] Soil, waste and vent and inside conductor pipe stacks, and all work known as "rough" work between the house drain connections to points above the finished floors and beyond the finished face of walls and partitions, shall be tested and when the whole stack is completed and topped out above the roof, with the water, air or smoke test.

The water test shall be applied by closing the opening at the outlet end of the house drain and all openings in the piping with proper testing plugs to the highest opening above the roof, and completely filling the system with water; the water columns to be left standing at least fifteen (15) minutes; if the water level remains constant such time the system shall have been acceptably tested.

When water is not available or when there is danger of freezing, the air or smoke test shall be used with a pressure of five (5) pounds, using an open mercury gauge with ten (10) inches of mercury.

Section 9. [Smoke test.] The drainage system of all new buildings and all new soil, waste or vent pipe stacks hereafter installed in existing buildings shall be given their final tests with smoke.

The smoke machine shall be connected to any suitable opening or outlet in the system, and when the system is completely filled with dense pungent smoke, and the openings emit smoke they shall be closed and an air pressure equivalent to a one (1) inch water column shall be applied and left standing at least ten (10) minutes. If there is no leakage or forcing of trap seals, the system shall be deemed air or gas tight. But nothing in this section shall be so construed as to prevent the removal of any cleanout, or unsealing of trap to ascertain if the smoke has reached all parts of the system.

Section 10. [Smoke test—imperative.] The smoke test shall be used in testing the sanitary conditions of the drainage or plumbing system of all buildings, where there is reason to believe that the plumbing system has become dangerous or defective on account of settlement of the buildings or by abuse, accident or other cause.

Section 11. [Defective work.] If tests show defects the defective work or material shall be replaced within three (3) days and the test again applied. In all cases the inspector shall designate the points at which the pressure shall be relieved or drawn off.

Section 12. [Repairs.] Tests shall not be required after the repairing or replacing any old fixture, faucet or valve by a new one, to be used for the same purpose; forcing out stoppage, repairing leaks, or relieving frozen pipes and fittings; but such repairs or alteration shall not be construed to include cases where new vertical or horizontal lines of soil, waste, vent or interior leader or conductor pipes are used or their relative locations changed, provided that, in a building condemned by the proper authorities because of unsanitary conditions of the house drainage or plumbing, no such drainage or plumbing shall be considered as coming under the head of repairs, but all such house drainage or plumbing shall be done as in case of new buildings.

Section 13. [Tests not required.] No tests or inspections shall be required where a house drainage and plumbing system or part thereof is set up for exhibition purposes; nor shall the final tests be required where the plumbing is placed in an outhouse, stable or detached building used exclusively for that purpose.

Title 14.

CATCH BASIN.

Section 1. [Yard catch basins.] Yard catch basins which receive surface drainage or the discharge from hydrants or waste pipes shall be not less than twelve (12) inches in diameter and have not less than a four (4) inch trapped outlet for cleaning, and placed below the frost line. Where the inlet is liable to injury, the same shall be provided with a heavy cast iron frame and strainer set flush with the grade.

Section 2. [Subsoil catch basins.] Subsoil catch basins, located where the water fluctuation is such that a constant water seal on the trap outlet is maintained, shall be located outside the walls of the building, provided with a ball cock attached to the water supply pipes for the maintenance of such seal. The trapped outlet for such catch basin shall be formed by turning a four (4) inch bend or invert down into the water of the basin to within six (6) inches of the bottom.

Section 3. [Kitchen catch basins.] Catch basins for receiving kitchen wastes, shall be constructed water tight either of brick, concrete, tile or cast iron. If of brick, tile or concrete, they shall be at least twenty (20) inches internal diameter, and be finished with a stone or iron cover.

Section 4. [Kitchen catch basins — inverts and traps.] The bottom of the catch basin shall be at least two (2) feet below the four (4) inch invert of the outlet to the sewer.

The outlet shall be trapped to a depth of twelve (12) inches below the invert of the outlet to the sewer, to prevent the escape of grease, by a hood or trap of brick and cement mortar or a hood of concrete or cast iron.

The invert of the inlet to the catch basin, for kitchen wastes, shall not be less than two and one-half (2½) feet above the finished bottom of the catch basin.

Title 15.

SUMPS AND EJECTORS.

Section 1. [Drainage below sewer level.] In all buildings in which the whole or part of the house drainage and plumbing system thereof lies below the crown level of the main sewer, sewage or house wastes shall be lifted by artificial means and discharged into the house sewer.

Section 2. [Sumps and receiving tanks.] All subhouse drains shall discharge into a perfectly air tight sump or receiving tank so located as to receive the sewage by gravity, from which sump or receiving tank the sewage shall be lifted and discharged into the house sewer by pumps, ejectors, or any equally efficient method.

Such sumps shall be either automatically discharged or be of sufficient capacity to receive the house sewage and wastes for not less than twenty-four (24) hours.

Section 3. [Ejectors — vented.] The soil or waste pipe leading to an ejector or other appliance for raising sewage or other waste matter to the street sewer, shall, where a wate closets are installed, be provided with vent pipe not less than four (4) inches er, and where fixtures other than water e installed the waste vent pipe shall be diameter as the soil or waste pipe.

4. **[Motors, compressors, etc.]** All ir compressors and air tanks shall be here they are open for inspection and all times. The air tanks shall be so ed as to be of equal cubical capacity jectors connected therewith, in which ll be maintained an air pressure of not two (2) pounds for each foot of height e is to be raised.

5. **[Ejectors for subsoil drainage.]** soil catch basins are installed below the el, automatic water ejectors provided ll float attached to the main water supbe used.

jectors or any device raising subsoil all discharge into a properly trapped

Title 16.

CESS POOLS.

1. **[Cess pools permitted.]** Tight g cess pools may be used to receive arge from water closets and sinks only tten permission to that effect has been rom the local board of health of the hich the same is constructed, if in a if not, then by the Ohio state board of d *such* permission can be given only

when a public sewerage system is not available.

Section 2. [Cess pools prohibited.] No cess pools for sewage shall be constructed where a sewer is available nor shall any connection from such cess pool be made with any sewer.

Cess pools now existing in premises accessible to a sewer, and cess pools that may hereafter become accessible to a sewer must be discontinued, emptied of their contents, cleaned out and be filled with earth or ashes and the house sewer shall be disconnected from the old cess pool and be reconnected with the public sewer.

Section 3. [Sewage cess pools.] Where a public sewer is not available, and written authority has been secured from the proper board of health (see section 1) to construct such cess pool and there is sufficient grounds for the purpose, a water tight cess pool may be used to receive the discharge of house sewage, which may be overflowed to a leaching cess pool, providing there is no danger of contaminating a water supply, well or spring and the soil is of an absorbent character. Otherwise a tight cess pool shall only receive the discharge from water closets and sinks and the waste from all other fixtures shall discharge to a surface water course.

Section 4. [Tight cess pools.] A water tight cess pool for drainage shall not be less than six (6) feet in diameter by ten (10) feet deep in clear, or its equivalent oval, built of cast iron; hard brick, eight (8) inches thick laid in Portland cement mortar and plastered on the inside with a one (1) inch coat of Portland ce-it mortar; or Portland cement concrete it (8) inches thick, and made water tight.

ection 5. [Leaching cess pools.] A leach- cess pool shall be not less than the dimen- s of the water tight cess pool, lined with dry ‹ or stone, viz.: without mortar.

:ction 6. [Ring and cover.] Tight and ıing cess pools shall be provided with a ıty (20) inch cast iron ring and cover.

:ction 7. [Location of cess pools.] No cess pool shall be placed within two (2) of any lot or twenty (20) feet of any ling or cistern or thirty (30) feet from any spring or other source of water supply used drinking or culinary purposes and shall be ıtained tight.

ɔ leaching cess pool shall be placed within hundred (100) feet of any dwelling or :r tight cistern or within three hundred (300) of the source of any water supply.

:ction 8. [Cess pool-vents.] Tight cess s shall be vented with four (4) inch cast vent pipe extending not less than ten (10) above the ground and not less than twenty feet from any window, door or other open- in buildings used for human habitation.

:ction 9. [Piping.] The outlet from the t cess pool shall be through a deep invert same size as the house sewer and the piping ׳een the tight and leaching cess pool may be er of earthenware or cast iron.

Title 17.

SEPTIC TANKS.

Section 1. [Permission to construct and use.] Septic tanks and filtration beds can be constructed only after the site has been inspected and the plans and specifications for the construction of the same approved by the Ohio state board of health and no such tank or bed can be used to receive human or animal excreta until after the construction and equipment of the same has been approved in writing by the Ohio state board of health.

Title 18.

VAULTS.

Section 1. [Privy vaults permitted.] Privy vaults may be constructed only on premises where water and sewers are not accessible.

Section 2. [Privy vaults prohibited.] Privy vaults shall not be constructed where a sewerage system is available nor on any lot where in cleaning, the night soil would have to be carried through any building or human habitation, nor shall any old vault be connected to a sewer.

Vaults now existing on premises accessible to a sewer shall be cleaned to the bottom and filled with ashes or earth.

Section 3. [Location of vault.] No vault, manure pit, open top cess pool, septic tank or other reservoir which is used as a privy or receptacle for human or animal excreta shall be located within two (2) feet of any lot or alley

or twenty (20) feet of any street line or
building of human habitation or occupancy
within fifty (50) feet of any cistern, well,
ng or other source of water supply used for
king or culinary purposes, whether they are
ted on the same or an adjoining lot, or
ises.

CEPTION. No privy vault shall be located
in fifty (50) feet of any school building.

ction 4. [Construction of vaults.] All
ts, pits or other open top reservoirs de-
ed in section 3 shall be made of either brick
oncrete. The walls of such vaults, if made
rick, shall be of hard burned sewer brick
less than eight inches thick, laid in Portland
ent mortar and the walls plastered outside
inside with a half inch coat of Portland
ent mortar, in proportion of one part of
land cement and two parts of clean, sharp
l. After this coating is put on it shall be
n one coat wash of liquid Portland cement.
bottom shall be at least three brick course
in cement mortar, or of Portland cement
rete eight (8) inches thick.

hen Portland cement concrete is used to
truct vaults, the walls shall be at least six
inches thick, laid to a form, and the concrete
l be made of one part of live Portland
ent, three parts of clean, sharp sand, five
s crushed stone, free from dust and of
s between one-quarter and one and one-half
es in largest diameter and shall be plastered
grouted inside and out as prescribed above
brick construction.

Vaults shall be made tight and their walls continued twelve (12) inches above the ground surface to prevent surface drainage. No retempered cement shall be used.

If the vault is used in connection with an outhouse the vault shall be of such a shape and size as not to extend under any portion of the floor of the said outhouse but only under the space occupied by the seats. Any portion of the vault extending beyond the walls of the outhouse shall be covered by a four (4) inch brick arch, four (4) inch stone flagging, reinforced concrete slab or cast iron.

Section 5. [Outhouses.] Over each privy vault, which shall receive nothing but human excreta, there shall be placed an outhouse constructed as prescribed in title 12, section 3.

The seats shall be provided with tight fitting covers, and the space underneath shall be ventilated by a vent pipe or box extending upward through and three (3) feet above the roof. Such vent pipe shall be at least six (6) inches square for every square yard or part thereof of vault surface.

Section 6. [Cleanout doors.] Vaults shall be provided with a cleanout extension not less than two (2) by one and one-half (1½) feet in size, connecting directly with the vault.

Cleanout shall be provided with a trap door the full size of the cleanout. Cleanout extension shall extend at least one (1) foot above the grade line.

Section 7. [Floors.] Floors of outhouses shall be made as tight as possible.

Section 8. [Outhouses for different sexes.] Where outhouses are provided for the different sexes, if located within forty (40) feet of each other, the walks or approaches thereto shall be separated by a tight fence, at least six (6) feet high; but in no case shall such outhouses be located within ten (10) feet of each other.

Title 19.

PUMPS AND HYDRANTS.

Pumps and hydrants shall be placed in the enter of a concrete or cement platform not less han six (6) feet in diameter.

Platform shall be placed six (6) inches above he natural grade line and be graded up around he same to within two (2) inches of the top of he platform and in such a manner as to run all urface water away from the pump or hydrant.

Pumps and hydrants shall be provided with oncrete or cement gutters, or sewer pipe drains which will carry away all waste water and discharge same at a point not less than twenty (20) eet distant from the pump or hydrant.

S. J. VINING,
Speaker of the House of Representatives.

HUGH L. NICHOLS,
President of the Senate.

Passed May 31, 1911.
Approved, June 14, 1911.

JUDSON HARMON, *Governor.*

INTERPRETATIONS.

Approved by the Ohio State Board of Health, September 14th, 1911.

A WASTE PIPE is any pipe which receives the discharge of any fixture except water closets and conveys the same to the soil pipe or house drain.

SOIL PIPE is any pipe which conveys the discharge of water closets with or without other fixtures to the house drain.

HOUSE DRAIN is that part of the horizontal piping of a house drainage system which receives the discharge of all soil, waste and other drainage pipes inside the walls of any building and conveys the same to the house sewer, three feet outside the foundation wall of such building.

HOUSE SEWER OR MAIN DRAIN is that part of the horizontal piping beginning three feet from the foundation wall to its connection with the main sewer or cesspool.

A VENT PIPE is any pipe provided to ventilate a drainage and plumbing system of piping and to prevent siphonage and back pressure.

A BACK VENT PIPE is that part of a vent pipe line which connects directly with an individual trap underneath or back of the fixture and extends either to the branch, main, soil or waste vent.

MAIN SOIL, OR WASTE VENT is that part of he main soil or waste pipe above the highest nstalled branch or fixture connection, extend-ng through the roof.

RULINGS.

Title 1 — Section 1. A three inch soil stack lay be from forty-five degrees to vertical above le highest fixture inlet.

Title 1 — Section 2. Slop sink with trap ombined and pedestal urinal traps may be 2½ ches.

Title 1 — Section 3. For five (5) inch traps ld over the vent shall be one-half the diameter the trap. Except as in TITLE 11 — SECTION — LATRINES.

Title 2 — Section 2-C. Coating of pipe or tings above ground with Linseed oil or coal l before testing and any coating after testing ll be approved.

Title 2 — Section 3-B. Brass fittings and il pipe with threaded fittings will be permitted r vent and back vent.

Title 3 — Section 7. "FULL WIPED JOINTS" ay have a maximum exposed surface of the lder to each side of the joint of three-quarters) of an inch.

Title 3 — Section 9. "METAL TO METAL" floor nges will be approved.

Title 3 — Section 9. "SUITABLE" may be as ort as two inches.

Title 4 — Section 1-A. "EACH SINGLE FIX-URE" will include a set of three wash trays, or wash stands, a set of one or two wash trays with sink combined, provided they are made in ONE FIXTURE, and the trap is placed central, and the branches connect into the seal of the trap, and the size of the trap and branch conforms to that required for separate fixtures.

Title 4 — Section 1-F. A main house trap will be permitted on the house drain, provided a vent pipe is taken from both sides of the trap, the same size as the house drain, and carried separately to the roof, and located as for roof outlets.

Title 4 — Section 1-I. A downspout trap will be considered a permanent water seal for a floor wash or cellar drain where it sets over the hand hole on the inlet side of the trap, and is provided with a cleanout screw.

Title 4 — Section 2-B. Any floor or wall connection of fixture traps will be regarded as cleanouts, provided they are bolted or screwed to the floor or wall.

Title 6 — Section 8. The house sewer may be the size specified in Title 1 — Section 1, regardless of the size of the slant or opening in the main sewer.

Title 7 — Section 2. Barn, stable, yard or roof leader drains may be connected to the house drain or house sewer at any convenient point.

Title 9 — Section 4. "A SLEEVE" will not be required where the face of the hub is flush with the roof and lead flashing is calked into hub.

Title 9 — Section 7. "SIMILAR FIXTURES" means pedestal urinal or trap standard slop sink.

Title 9 — Section 8. Does not prohibit reconnecting to soil or waste vent above the top of the highest fixture.

Title 9 — Section 9. For the purpose of obtaining a directly rising vent from a vertical waste line a fixture trap immediately under a small fixture waste may be placed not more than twenty-four (24) inches from the vertical waste and vent line, measured between the center of the waste outlet of the fixture and the center of the waste and vent, provided that the point of entry into the vertical waste line is not lower than the bend of the trap.

For water closets and similar fixtures the distance allowed between the waste opening in the floor or wall and vent or back vent shall not be more than twenty-four (24) inches developed length.

Title 9 — Section 10. Does not prohibit reconnecting to soil or waste vent above the top of the highest fixture.

Title 9 — Section 11. "RISE" may be from forty-five degrees to vertical

Title 9 — Section 13. Where the discharge of the fixtures above exceeds twice the area of the soil or waste stack, the nearest fixture to the stack must have a continuous waste and vent pipe of not less than one-half the diameter of the stack, and the vent must rise at an angle of forty-five degrees to vertical.

Title 9 — Section 14. This vent must be

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